

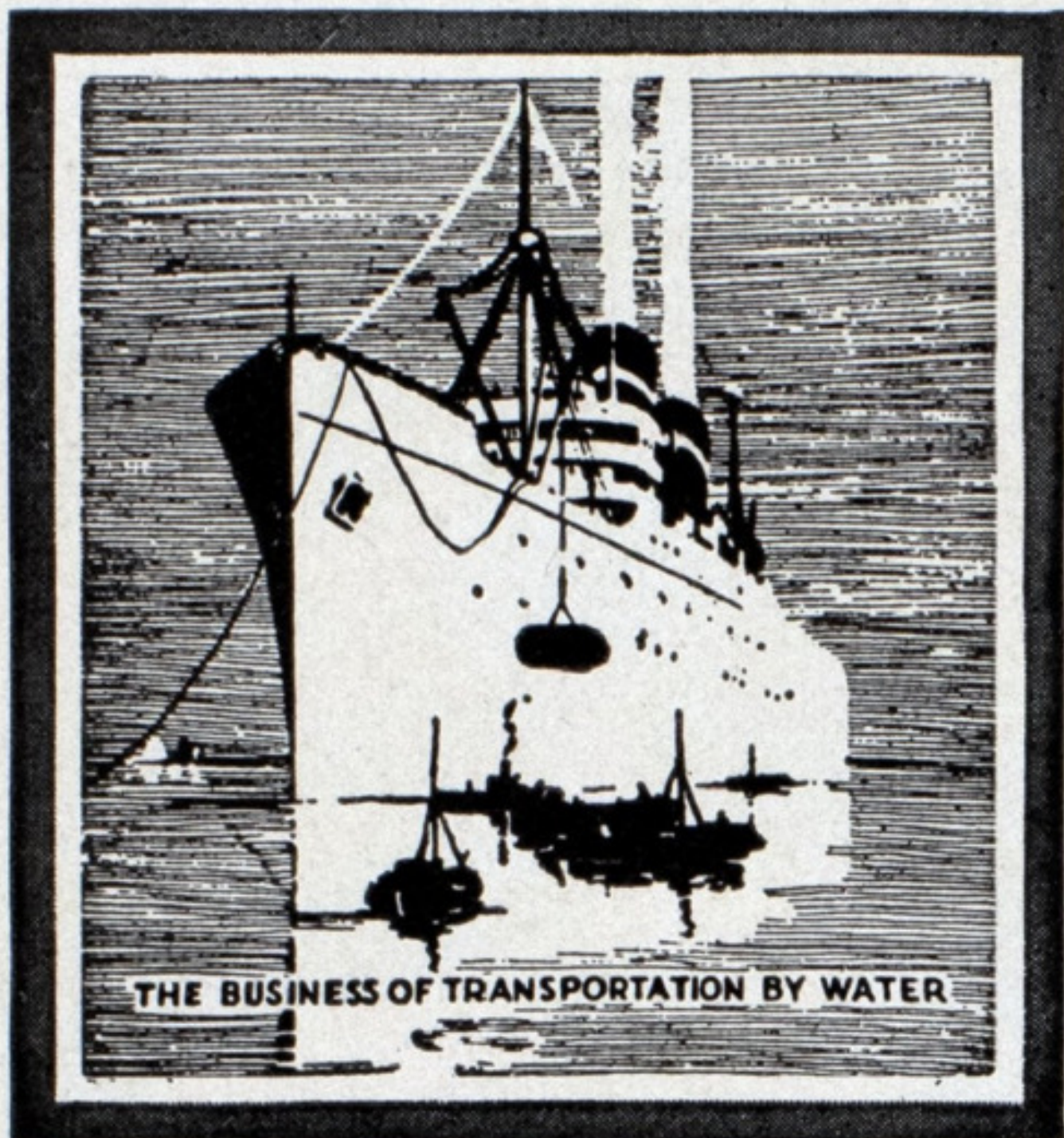
Marine Review

*The National Publication Covering the Business of
Transportation by Water*

CLEVELAND

FOUNDED 1878

NEW YORK



Published monthly by
The Penton Publishing Co.
Cleveland, Ohio, U. S. A.

Cleveland Office, Penton Bldg.
A. H. Jansson, *Editor*
H. O. Taylor, *Advertising Manager*

Chicago Office, 1347 Peoples Gas Bldg.
L. C. Pelott
W. G. Gude

New York Office, 220 Broadway,
E. C. Kreutzberg
B. K. Price
E. W. Kreutzberg, *Advertising Rep.*

Pittsburgh Office, 507-8 Oliver Bldg.
S. H. Jasper
E. A. France Jr.

Washington, D. C. Office,
1050 National Press Building
L. M. Lamm

London Office, Caxton House
Westminster, S. W. 1
Vincent Delpont

CONTENTS

Vol. 62

October 1932

No. 10

	Page
Editorial	7
Washington, Second U. S. Liner Launched	9
Speed Ratings Held by Ocean Liners	10
By W. L. Harms	
Seatrain New York, Launched at Chester	13
Ship Design, Suggestions for Improvement	14
By A Naval Architect	
R. L. Hague, Diesel Tanker Launched in Italy	17
Dundee, Suction Dredge, Dustpan Type, Completed....	18
Dearborn, Single Screw Diesel Electric Tug	20
French Superliner, Work to be Continued	21
By Vincent Delpont	
Self-Unloader Electrical Equipment Described	23
By C. T. Pearce	
Maritime Law—Late Decisions	24
By Harry Bowne Skillman	
Ports—Marine Business Statistics Condensed	25
New Construction Ordered and Contemplated	26
Stevedoring and Dock Management Progress	30
Using Side Ports for Cargo Handling	
By H. E. Stocker	
Long Beach Harbor Described and Illustrated	
Useful Hints on Cargo Handling	33
Up and Down the Great Lakes	34
Outlook for Ore Shipments in 1933 Improved	35
Personal Sketches of Marine Men.....	36
Rear Admiral G. H. Rock, Ret. Heads Webb Institute....	
By Lynne M. Lamm	

MARINE REVIEW is a member of the Audit Bureau of Circulations, Associated Business Papers Inc. and the National Publishers Association. Entered at the Post Office at Cleveland, Ohio, as Second Class Matter, under the act of March 3, 1879. Copyright 1932 by The Penton Publishing Co., Cleveland, O.



Subscription United States and its possessions, \$3 per year; single copies 35 cents. Back numbers over three months 50 cents. Subscription Canada \$4.00; Great Britain and other Foreign Countries, £1-4 shillings. Cable addresses: Penton, Cleveland, and Irotrapien, London.

The A. B. P. is a nonprofit organization whose members have pledged themselves to a working code of practice in which the interests of the men of American industry, trade and professions are placed first—a code demanding unbiased editorial pages, classified and verified paid subscribers, and honest advertising of dependable products.

« EDITORIAL »

Help the Merchant Marine to Increase Efficiency

IF THE concept of government, that is public, encouragement and aid to private initiative in building up a merchant marine is limited to the loaning of money, ultimate success in the objective intended will be largely a matter of chance depending on the quality of management and the kind of competition encountered. As we have repeatedly stated before, the game must be played according to the rules. We must have faith in our representatives until the evidence is unmistakable that they are inefficient or devious.

The present chairman of the shipping board has received the endorsement of three Presidents of the United States. He has been a member of the board for 11 years, 8 of these as chairman. Constantly throughout this period his actions have been subjected to the most critical official and public scrutiny. In all fairness it much be admitted that his honesty and the quality of his judgment have been thoroughly tested.

On this basis therefore we must assume that the public interest has been fully protected in the award of 43 mail contracts, on as many trade routes in foreign service, involving an annual payment of \$25,213,629. The same applies to the large sums loaned from the construction loan fund for building new and reconditioning existing vessels. The total so loaned to July 31, 1932, amounted to \$148,906,723 of which \$6,835,183.40 had been repaid up to June 30, 1931.

This is not to say that success will attend every mail route and every enterprise granted construction loans. It is to say, however, that a solid reasonable presumption of success existed in every instance and that public interest, in maintaining adequate lines of communication with American flag ships for the development of commerce, dictated the policy followed in granting these aids.

It is realized that a great deal has been done by the shipping board for the encouragement of the merchant marine in addition to acting in its legal capacity as the agency responsible for

authorizing these substantial material aids. Its bureau of research has developed much information of value on many phases of shipping. In the engineering and technical field both experimentally and practically it has contributed to useful knowledge tending to increase efficiency. Collaborating with the corps of engineers, United States army, it has been instrumental in publishing complete information on ports of the country. It has contributed much to the subject of insurance. Many other matters involving improved operation and better practice have received its earnest attention.

Money alone will not create a successful merchant marine. Wise, efficient, vigorous, honest management of each individual enterprise is the prime essential. The shipping board in its capacity as trustee of public funds invested in private operation has a fundamental responsibility and occupies a position of great influence in helping to set up this kind of management. Having authorized financial aid on a sound basis it should do everything within its power to keep the enterprise sound by constant familiarity with its specific problems and difficulties.

For each service and for the good of the merchant marine as a whole an ordered program of investigation might well be undertaken according to something like the following outline:

1. Establish present and prospective future demands for transportation and the character of service now rendered in each route.
2. Assemble authoritative data on the most efficient, commercially successful type of vessels in all categories serving specific trades and determine the measure of their superiority over older and less efficient units, with recommendations for possible further improvements.
3. Carefully study and analyze the terminal facilities and cargo handling methods and cost.
4. Determine qualifications of officers and crews including losses due to slackness or inefficiency.
5. Consider the subject of safety ashore and

afloat, with the view of determining that the record compares favorably with good practice.

6. A thorough scrutiny of type and quality of management, including methods used in connection with securing business, keeping records, serving and maintenance of the ships, accounting and finance.
7. Insurance and the basis and reasons for charges.
8. Study all government rules and regulations as they actually affect the every day conduct of business with the view of modification to facilitate operation. There can be no real conflict of interest as the objective of properly devised rules is the good of all concerned.

A Third Cabin Liner Is Necessary

THE MANHATTAN of the United States lines, entering service in the North Atlantic on Aug. 11, has already made such a satisfactory record for herself in popularity with the traveling public and as a commercially successful vessel that it seems more than likely that ways and means will be found to go ahead with the building of a third vessel of this type. It is reported that the United States post office department would like to see the United States lines place a third vessel of this type in service. With three vessels the line could provide a three-week turnaround from New York to Hamburg. It is hoped that the third vessel will soon be undertaken.

Data on Diesel Conversion Program

THE United States shipping board has issued a report giving data relating to the diesel conversion program. The first program of conversion, including 12 vessels, was authorized by the shipping board on June 17, 1924. The conversion of the second group of eight vessels was started in June, 1927. Conversion to diesel electric drive was also authorized and carried out for three sister ships.

The report contains much specific information on the operation of these vessels in service. This information is given in detail in tabular form for each vessel by name. It will be interesting to note here a part of the conclusions of J. W. Barnett, director of the bureau of construction of the shipping board, author of the report.

"Throughout this report," Mr. Barnett says,

"no attempt has been made to determine which make or type of engine has been most satisfactory from the financial or performance standpoint. To make such a study many variable factors must be kept in mind and it is doubtful if a fair and unbiased conclusion could be reached.

"All the main engines of the first program may be considered as being of an experimental nature for the reason that they were the first large engines designed and built in this country, and therefore it is reasonable to expect high repair costs. For some vessels, however, the costs were relatively low as compared to others. Among a large fleet, there are always certain units which operate at low cost, as compared to other units of the fleet, or even as compared to sister ships. This may be attributed to exceptionally efficient operating personnel; machinery of better design, workmanship, or material; or to better installation."

And finally the author says: "Average data now available, relative to the second group of vessels converted, may be used as a basis for estimated operating costs of a proposed fleet of motorships of sizes and speeds comparable to those of this program."

For all the diesel vessels in the second group and considering 22 voyages at an average draft of 20 feet 3 inches, the average speed was 12.2 knots and the average fuel per day in tons was 16.5; the average lubricating oil per day in gallons was 17.05 and the average per day of cylinder oil in gallons was 19.78. The average per day fuel consumption in port was 6.21 barrels or 0.86 ton. For all of the 22 voyages, 1855 days 7 hours and 33 minutes were spent at sea; 15 days 6 hours and 52 minutes were at reduced speed; 14 days 10 hours and 32 minutes was the total of time stopped at sea. Time in port for the 22 voyages amounted to 1652 days 6 hours and 33 minutes.

Board Scraps Obsolete Vessels

KEEPING manifestly obsolete and deteriorated vessels as potential active units of the merchant marine will serve no useful purpose and will continue to subject the owner to needless cost in caring for them. Everyone will therefore applaud the action taken by the shipping board on Aug. 31, to scrap and surrender documents of registration for 124 obsolete merchant vessels owned by the government. The deadweight tonnage of this great fleet amounts to 1,077,243. By this action the total of shipping board vessels will be reduced to 242

of which 99 are active and 143 inactive. The total also includes 60 cargo vessels on lines which have been sold, but not delivered. The vessels selected for scrapping vary in dead-weight tonnage from 12,980 to 3630. They are variously located at Philadelphia, New York, Norfolk, Va., New Orleans, and Mobile.

As long as these obsolete vessels were held in reserve, they served as a definite deterrent to action in the planning and building of really suitable up-to-date modern freighters for specific needs. There was always a threat of ruinous competition by the purchase of these vessels at less than a nominal figure and plac-

ing them in service at rates bearing no true relation to the actual cost on the basis of efficient service.

Having taken this effective step it is to be hoped that the shipping board will soon make another thorough survey with the view of still further reducing its laid up inactive fleet, throwing out every vessel which has outlived its usefulness. By such action the shipping board is helping to clean house of much junk now on the lists of our merchant marine. This will give an opportunity for a new deal in building up really efficient modern vessels specifically suited for the trade intended.

Washington, Second U. S. Liner Is Launched

LAUNCHING of the WASHINGTON, sister ship of the MANHATTAN already acclaimed as a result of her performance in service as America's greatest ship, took place from the yard of the New York Shipbuilding Co.,

She has the same dimensions as the MANHATTAN (fully described in the September MARINE REVIEW) and is 705 feet in length over all, 86 feet in beam, with a displacement of 33,000 tons. Her propelling machinery will con-

sist of two independent sets of single reduction geared turbines, each direct connected to a propeller shaft. The total normal output will be 30,000 shaft horsepower at sea, maintaining a speed of 20 knots in moderate weather. There will be accommodations for a total of 1239 passengers and for a crew of 478.

The popular reception accorded the MANHATTAN during her brief period of service has been most heartening to owner, builder and to every American interested in the development of the merchant marine. When the WASHINGTON is completed, fine though the MANHATTAN is, she will be superior to her in many minor improvements.

The keel of the WASHINGTON was laid Jan. 20, 1931 and under the present schedule she will join her sister ship in the New York-Hamburg service in May, 1933. The ports of call in this service are Cobh, Plymouth, and Havre eastbound, and Havre, Southampton and Cobh, westbound.

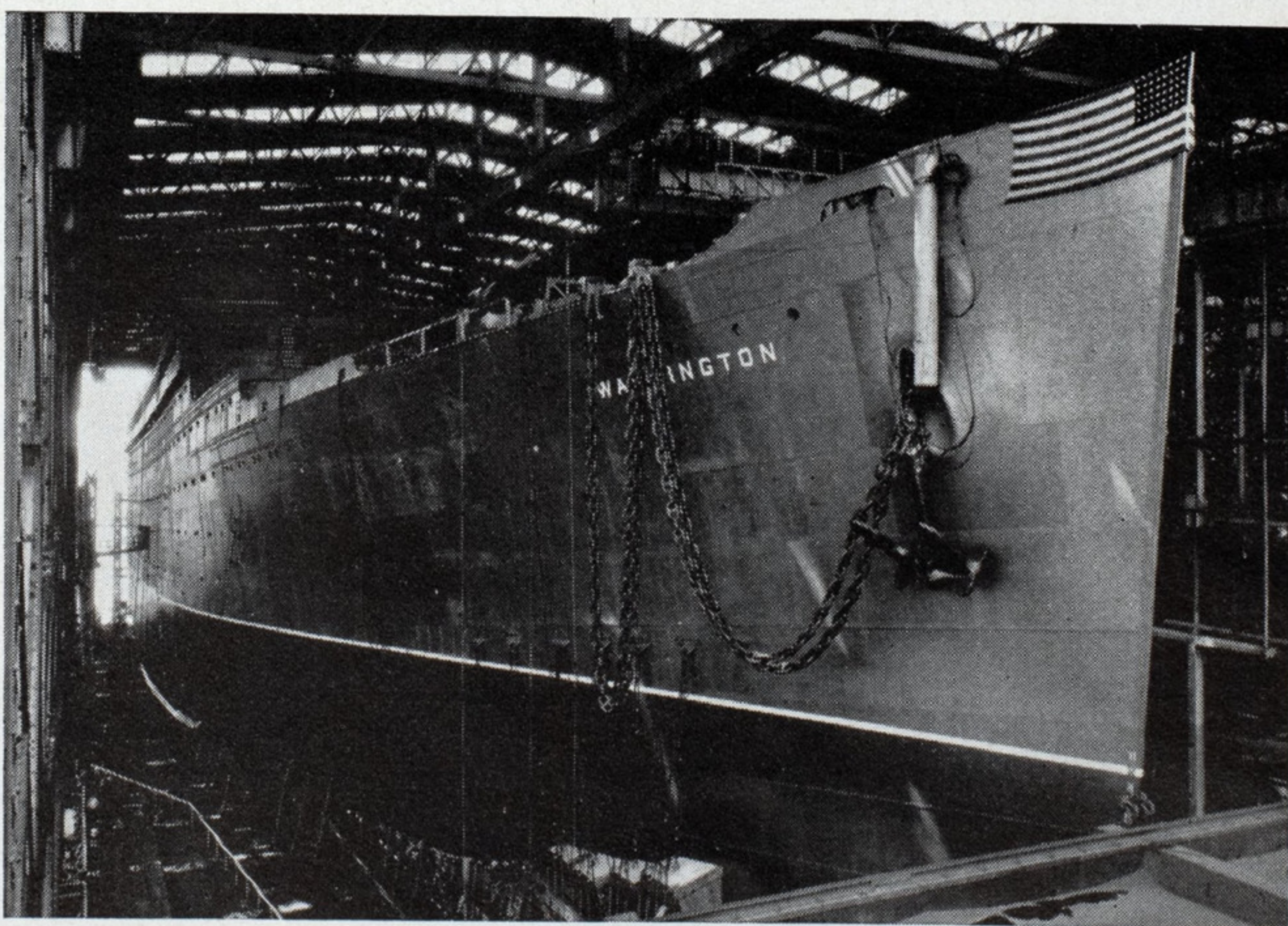


AT THE launching of the Washington from the yard of the New York Shipbuilding Co., Camden, N. J., Aug. 20. Left to right Mrs. C. L. Bardo, Miss Betty O'Connor, Mrs. Stephen O'Connor, and the sponsor, Mrs. T. V. O'Connor.

Camden, N. J., at 5:30 p.m. Aug. 20. The sponsor was Mrs. T. V. O'Connor, wife of the chairman of the United States shipping board. The water used for christening was drawn from a spring at Mount Vernon, historic home of Washington, by Miss Patricia Hurley, daughter of the secretary of war.

Having a launching weight of about 16,000 tons, the great ship moved smoothly and easily down the ways into the Delaware river where she was stopped in mid-stream when three 10-ton anchors were put overboard. Speakers at the launching included Chairman T. V. O'Connor of the shipping board, C. L. Bardo, president of the New York Shipbuilding Co. John M. Franklin, vice president of the Roosevelt Steamship Co. and P. V. Mitchell, vice president of the United States lines.

The WASHINGTON, and her sister ship MANHATTAN, were contracted for by the United States lines in May, 1930, at a cost of over \$10,000,000 each.



Washington, sister ship of the Manhattan, Shortly before Launching

Speed Ratings Held by Ocean Liners

Are Not Always Stated Accurately

By W. L. Harms

NOT THE least interesting feature of the register book published each year by Lloyd's Register of Shipping is that department setting forth the speed ratings of the faster merchant vessels, regularly included toward the end of the appendix volume.

There is really a degree of pleasant anticipation in turning to the speed tables in a newly issued edition, to see how the well known mail liners of the world have maintained their ratings; and how the figures for the new ships, when listed for the first time in this sober catalog, will check with the complacent announcements that have appeared in the press.

Lloyd's register has deservedly attained such a high reputation for authority and accuracy that it is usually the source resorted to for authentic data concerning ships. However, it should be noted that the speed tables presented, while reliable enough for general purposes, are not to be understood as being conclusive.

Difficulties in Using Data

For one thing these speed tables are not complete. Listing as they do ships of 12 knots and over, they still omit many eligible vessels in each edition. Doubtless this is because some shipowners do not see fit to supply the information and as the register does not actually concern itself with speed ratings as an essential item it interests itself no further than to publish the figures applying to such shipping companies as care to be represented.

This circumstance would tend to mislead, let us say, if an attempt be

made to ascertain the number of merchant vessels under each flag capable of a certain speed and over. Such data is called for occasionally in discussions of naval matters, or in gaging the quality of a nation's merchant marine.

Further, the speed ratings in the register cannot always be relied upon to afford an accurate comparison among the ships listed. This does not mean that we are to suspect any outright misinformation, whether due to design or to mere carelessness. Rather, allowance might be made for inconsistency among the shipowners represented as to the basis for rating speed.

True, Lloyd's register is quite explicit here, for the section on speed of vessels is introduced in the following words:—

Lists of merchant steamers and motorships capable of maintaining, at sea, a speed of 12 knots and above:—compiled from returns furnished by the owners—the speeds recorded are given on the authority of the owners as being the speeds which the steamers and motorships are capable of maintaining at sea in ordinary weather and under ordinary conditions of loading. The society of Lloyd's Register of Shipping is not responsible for the accuracy of the information so supplied.

Yet, a study of the ratings given leads one to suppose that a few owners may have overlooked the society's intent. Some figures seem rather superlative, as if representing maximum trial results over the measured mile, which seems to be the practice customary in the rating of naval vessels;

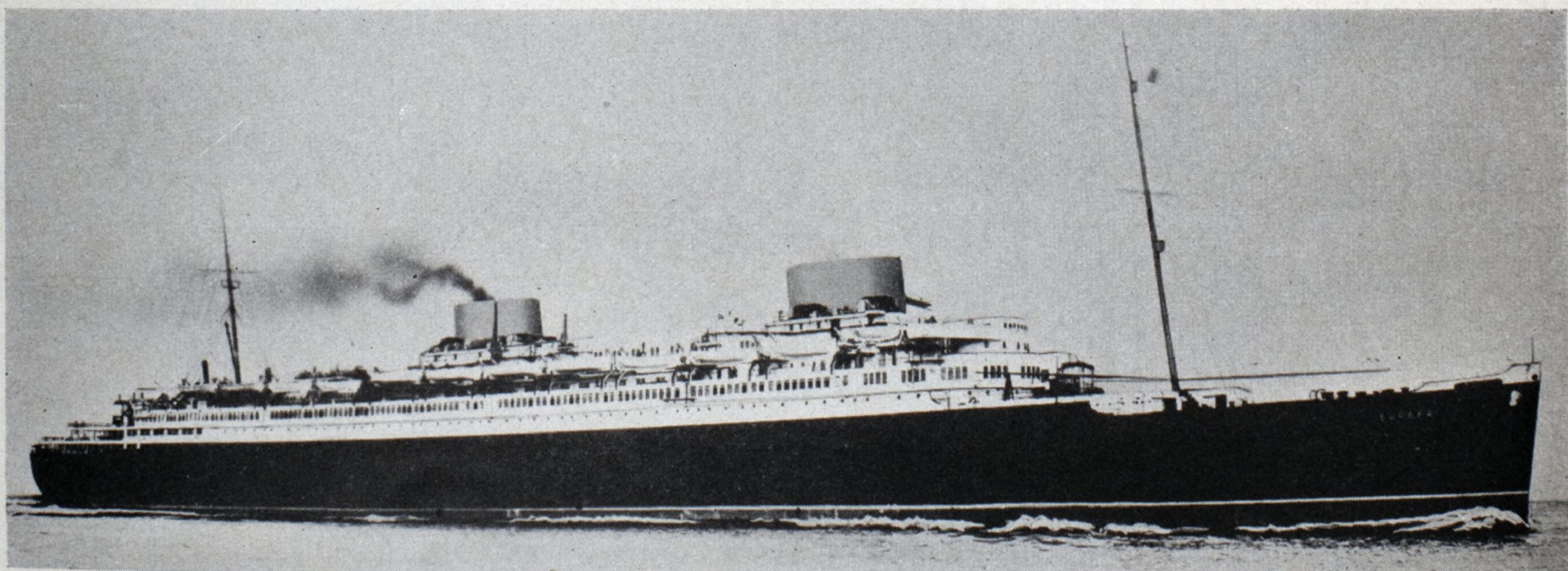
other figures have a conservative aspect implying just "service speeds," that is, averages of the performances recorded in actual service through the year, influenced as they would be by the varied conditions met with, favorable and unfavorable. Whether these are just rare exceptions, or represent frequent instances throughout the tables it is not easy to say; to render such a judgment would require a very broad intimate acquaintance among the world's argosies.

Analysis of Actual Cases

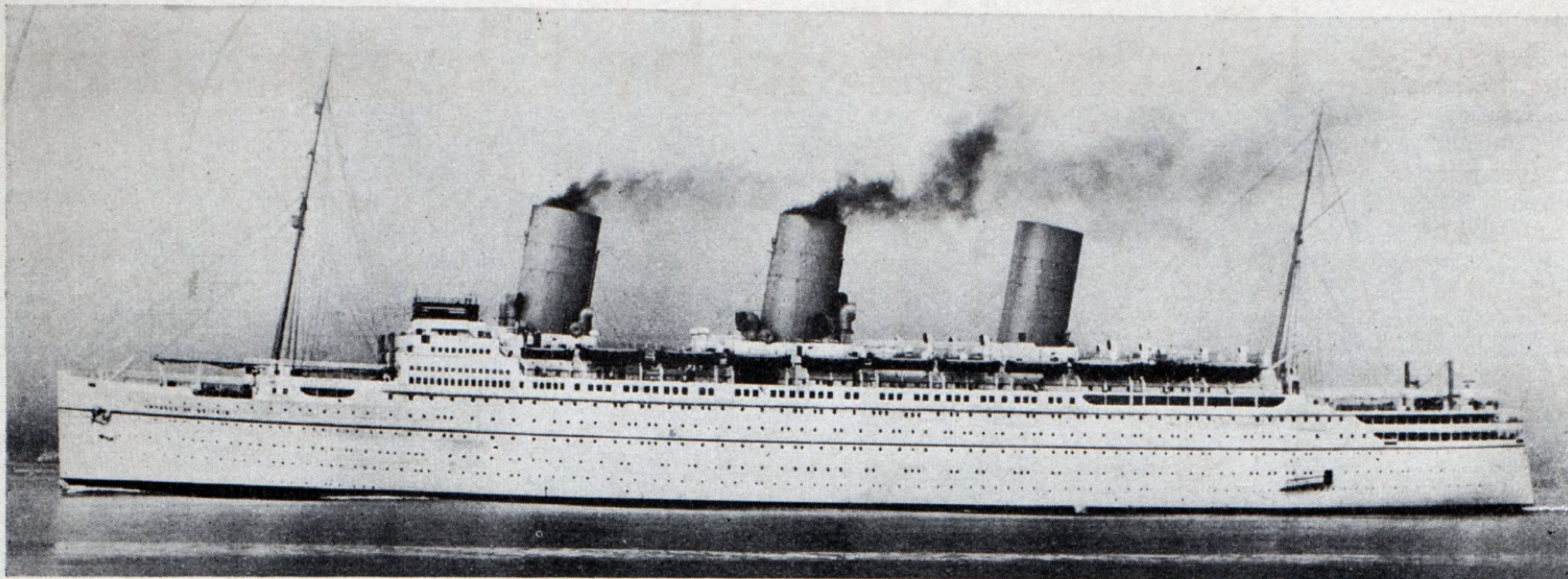
It will have been noticed from the quotation above that the register itself cautions us in the matter. It is always good form to accompany general statements with some actual examples. There follow several entertaining ones bearing upon our subject.

We can do no better than to begin with the notable American liners of the 535-foot class. They are ideal for our purpose in that they are of uniform design, and at the same time have been distributed among different owners. In the start, when all sixteen of them were yet under shipping board ownership, they were listed as 17-knot vessels. It cannot be far wrong to suggest this to have been a somewhat modest rating.

They have since passed into three distinct private ownerships. The Dollar companies possess ten, which are now recorded in the register as of 18 knots. The four that have been acquired by the Munson line are currently rated at 18½ knots. Of the remaining two, belonging to the United States lines, the *PRESIDENT HARDING* is credit-



Europa—Rated at 26 knots. The author thinks 28 knots a fair rating for both Europa and Bremen



Empress of Britain rated at 24 knots. The author believes this should be at least 24½ knots

ed with 19 knots and the PRESIDENT ROOSEVELT with as high as 20 knots, which figures date from the Chapman period of control.

These sixteen ships were constructed to what amounted to the same speed specifications; none of them have since undergone any significant alterations with regard to the engines, if memory serves correctly. It is to be expected that the vessels should vary a bit individually in actual performance, but hardly so far as to span the three-knot margin of discrepancy to be observed in the foregoing ratings.

What Rating Should Be

The opinion is here advanced that the 18½ knots quoted for the Munson ships above may correctly be applied to the class in general. With respect to the two United States liners in particular, while that additional half-knot is not exactly to be admitted for the PRESIDENT HARDING, we can accord it to the PRESIDENT ROOSEVELT, in virtue of an actual 19-knot average across the Atlantic to the credit of this vessel. But to go further, to concur in that 20-knot rating for the ROOSEVELT, one might well desire first to inspect some evidence in support of it, in the shape of an abstract of log.

Similarly, there have been variations, and remarkable ones, in the ratings of the MAJESTIC and the LEVIATHAN as published in the register. Aside from certain minor differences, these two liners are virtually of duplicate design; they are indeed built in the same shipyard, originally for the account of the same owner, the Hamburg-American line.

A service speed of 23 or 23½ knots was intended for the pair. Despite a ridiculous story to the contrary published in later years, the Germans did attain this, apparently without difficulty, with the VATERLAND (LEVIATHAN), the first of the pair and the one placed in service by themselves. In the register at that time she was accorded a rating of 24 knots.

Subsequently, in the possession of

the United States shipping board, her rating in the register dropped to 21 knots. Upon her reconditioning for the United States line's service, it rose to 22 knots, in the year 1923. At the same time, however, her near twin, the MAJESTIC, which had recently been completed and put in service by the White Star line, was listed at 26 knots!

Influenced, it would seem, by the smart performances of the LEVIATHAN, the powers-that-were advanced her rating to a grudging 23 knots, and then, a couple of years later, back to 24 knots. Meanwhile the figure for the MAJESTIC settled down to a more credible 25 knots. And upon the trans-

PUBLIC demand for speed in transportation provides the incentive for keen rivalry in the development of naval architecture and marine engineering. Since speed is costly, economic facts must be taken into account. Past experience, however, shows that the added cost is justified when the universal desire for speed is supported by populous, highly developed and wealthy communities. The successful practical application of speed is in a sense a measure of the vigor, the growth in achievement of our present cycle in the progress of civilization. It represents the restless urge of abundant energy and it exemplifies characteristics which are the antithesis of decadence, timidity and slothfulness.

Editor's Note.

fer of the United States lines to the private ownership of the Chapman company, the LEVIATHAN also arrived at 25 knots, which remains the present rating for both ships.

Speed of Leviathan and Majestic

In this case also there has been no significant alterations in the power plants of the ships, such as might be reflected in these fluctuating ratings. Of course, the LEVIATHAN was converted from coal to oil fuel in 1922-23, in preparation for her re-entry into liner service. Yet it is to be doubted that her high speed owed much to this process, for she had already shown in startling fashion what she could do, on the occasion of her original trial trip, on coal, back in 1914.

As for any actual difference in speed between these superships, it is instead noteworthy how evenly matched they have proven. For instance, in the course of the year 1925, according to a conference report, the average speed of their passages throughout the season worked out at 23.78 knots for the MAJESTIC and at 23.77 knots for the LEVIATHAN. In that year, by the way, both vessels were probably at the peak of their efficiency.

In being listed as 25-knot ships it would seem that the twins have nowadays at last been assigned quite authentic ratings in the register. Referring to mean speed over a single ocean crossing, the LEVIATHAN has to her credit an average of 24.81 knots (do we remember correctly something about another passage at 24.91 knots?), while the MAJESTIC has indeed scored an average of 25 knots flat, and further emphasized it with another of 24.98 knots.

Before we assume any definite lead here for the White Star liner, it should also be noted that, balancing these performances, which were done to the eastward, the MAJESTIC's best reported average to the westward, of 24.15 knots, has been topped by a westward run of the LEVIATHAN, at 24.28 knots.

A glance over the ratings assigned to the other White Star liners shows

them to have been computed conscientiously. The 22½-knot rating for the OLYMPIC is justified by actual crossings at averages of up to 22.83 knots. While the HOMERIC is not highly regarded as an express liner, her 20-knot dignity has foundation in an actual passage at a reported 20.39 knots. It is to be wondered at, though, that the ALBERTIC is not credited with more than the 16½ knots; she was built to be an 18-knot ship, and was reported to have done well at her original trials.

Of the other United States liners, the two PRESIDENT'S have been discussed. The ships of the AMERICAN MERCHANT class appear to merit their 16-knot rating, from what has been reported of them.

Turning to the Cunard steamers, our first thought is naturally of the MAURETANIA, which we find listed as a 25-knot ship. In the twenty-five annual editions of the register book that have been issued since her first appearance on the seas, her rating has varied from 25 to 27 knots. Truly, the latter figure would hardly be an exaggeration, inasmuch as, in her unsuccessful effort not so long ago to retain the blue ribbon, she scored an average of as high as 27.22 knots.

Against the "23 knots" for the BERENGARIA and the AQUITANIA we have actual averages of better than 23½ knots to the credit of each, up to 23.96 for the former and 23.62 for the latter.

Passing over the five ships of the SCYTHIA class, which are given the quite reasonable rating of 16½ knots, we observe that the LANCASTRIA is likewise figured a 16½ knots. Now, this latter vessel was originally built for Anchor line service (which is a part of the great Cunard system), and in salient points of design is a true member of the CAMERONIA class. But the other five members, listed separately under the heading of Anchor line, are nowadays allowed no more than 15½ knots, although in former years they also were quoted at 16½. Probably the 16½ knots might well be applied uniformly to both the five SCYTHIA'S and the six CAMERONIA'S, especially as they all appear to have been fitted with similar engine and boiler installations.

Lest our concern over discrepancies of a mere knot or half-knot arouse an indulgent smile, it should be understood that such a seemingly negligible margin yet involves a margin of horsepower far out of proportion to the difference in speed. And the fuel bills represented are not exactly a laughing matter, either.

North German Lloyd Liners

Mention of the MAURETANIA naturally leads us to look up her successors for the blue ribbon, the North German Lloyd steamships BREMEN and EUROPA. These likewise, are quoted rather modestly in the register. In fact, while the company's other steamers in the North Atlantic service are rated ac-

cording to their best averages, the two record holders are yet listed at a figure—26 knots—which could more justly be reckoned as being their service speed. Both steamers have crossed the Atlantic at mean speeds of up to 27.91 knots, which figure happens to represent for each vessel the best average recorded so far. Accordingly, it would hardly be an exaggeration to rate the pair as 28-knot ships.

The four Hamburg-American liners of the ALBERT BALLIN class are listed in Lloyd's as of 18½ knots apiece. But each has to its credit averages of better than 19 knots, as high as the 19.76 knots scored by the HAMBURG.

The ratings for the liners of the Compagnie Generale Transatlantique have had interesting variations in Lloyd's register. Up to five years ago the crack steamers PARIS and FRANCE were listed at 22 and 24 knots respectively. Then, with the advent of the ILE DE FRANCE, the PARIS was demoted a knot, to 21, while the FRANCE lost in esteem to the remarkable extent of four knots, now being figured at 20 knots; the new flagship herself headed the fleet at 22 knots, and subsequently at 23. Lesser units also suffered; the previous LAFAYETTE (now known as the MEXIQUE) was degraded from 18½ knots to 16, the CUBA from 16 to 15, the EPAGNE all the way from 18½ to 15½, the ROCHAMBEAU from 16½ to 15, the CHICAGO (now GUADELOUPE) from 16 to as low as 12½ (latterly 13), and so on.

There occurred no wholesale program of engine alterations at the time, such as might account for these reductions in speed ratings. The changes were due probably to a revision by the company of its speed standard; so that, instead of rating the ships according to averages attained on single passages under fair conditions, as before, and as the shipping world in general is accustomed to do, the ships were now to be rated for their average steaming throughout the year.

With the current edition of the register, it is pleasant to see that the PARIS has come back again a bit, to 21½ knots, and that the FRANCE has regained face, at least to a quotation of 22½ knots.

Ratings of Paris and France

As a matter of personal opinion, the PARIS herself merits a rating of 22½ knots. And while of course it is not to be denied that the FRANCE is "not so young as she used to be," it is interesting to recall that before the war she hung up averages of up to 23.52 knots. The ILE DE FRANCE herself is still quoted as of 23 knots; however, actual averages of up to 23.96 knots entitle her really to a 24-knot dignity.

But if speed ratings vary so in the course of publication, while the ships themselves remain unaltered, "what can a man believe?"

While we are just on the subject of French liners, let us cast a puzzled

glance at that 24-knot rating assigned to the new L'ATLANTIQUE, of the Compagnie de Navigation Sud Atlantique. According to published descriptions, this ship, larger than the PARIS and approaching the ILE DE FRANCE in tonnage, has been designed for a service speed of 21 knots, and has been engineered to about the power of the PARIS. Offhand one might reason that 22 or 22½ knots be a more accurate rating for her. Furthermore, there has been no real need for the company to go to the expense of building a 24-knot ship for the South American run, as her closest rivals there would be one or two Italian liners of 21 knots and a German liner of 20 knots.

Speedy Empress of Britain

While she is at present graded as of 24 knots' speed, the probability is that the new EMPRESS OF BRITAIN is at least a 24½-knot ship, to judge from some of her reported performances. As for the EMPRESS OF JAPAN, an oversight has caused her to be omitted altogether from the speed tables, we can safely judge her as being a 22½-knot liner.

And against the 18 knots allowed the new STATENDAM, it is suggested that her performances qualify her quite for a 19½-knot rating.

An interesting revision of speed ratings is to be noted in that the Orient line, with the current edition of the register, has reduced the figures for its five crack liners of the ORAMA series from 20 knots to 18 knots, and for the ORMONDE and ORSOVA from 18 knots to 17.

In conclusion, one cannot forbear remarking on the 16-knot ratings so liberally distributed through the Furness-Withy cargo fleets for a number of years. Sixteen-knot freighters are rare specimens of marine design even in these days of advanced engine efficiency. Yet such a speed has been assigned to a number of Furness-Withy cargo liners for several years, as far back as the edition of 1923-24 in some cases. It is but human, then, to feel some curiosity as to the basis upon which these ratings have been figured.

Ships Broken Up or Lost

That the total of ships condemned, lost or broken up is a sizable figure is indicated in a report from Lloyd's Register of Shipping. During 1931 no less than 622 ships were either lost, condemned, broken up or wrecked. This huge fleet totaled 1,368,820 tons and included 588 steam and motorships and 64 sailing ships totaling 33,112 tons.

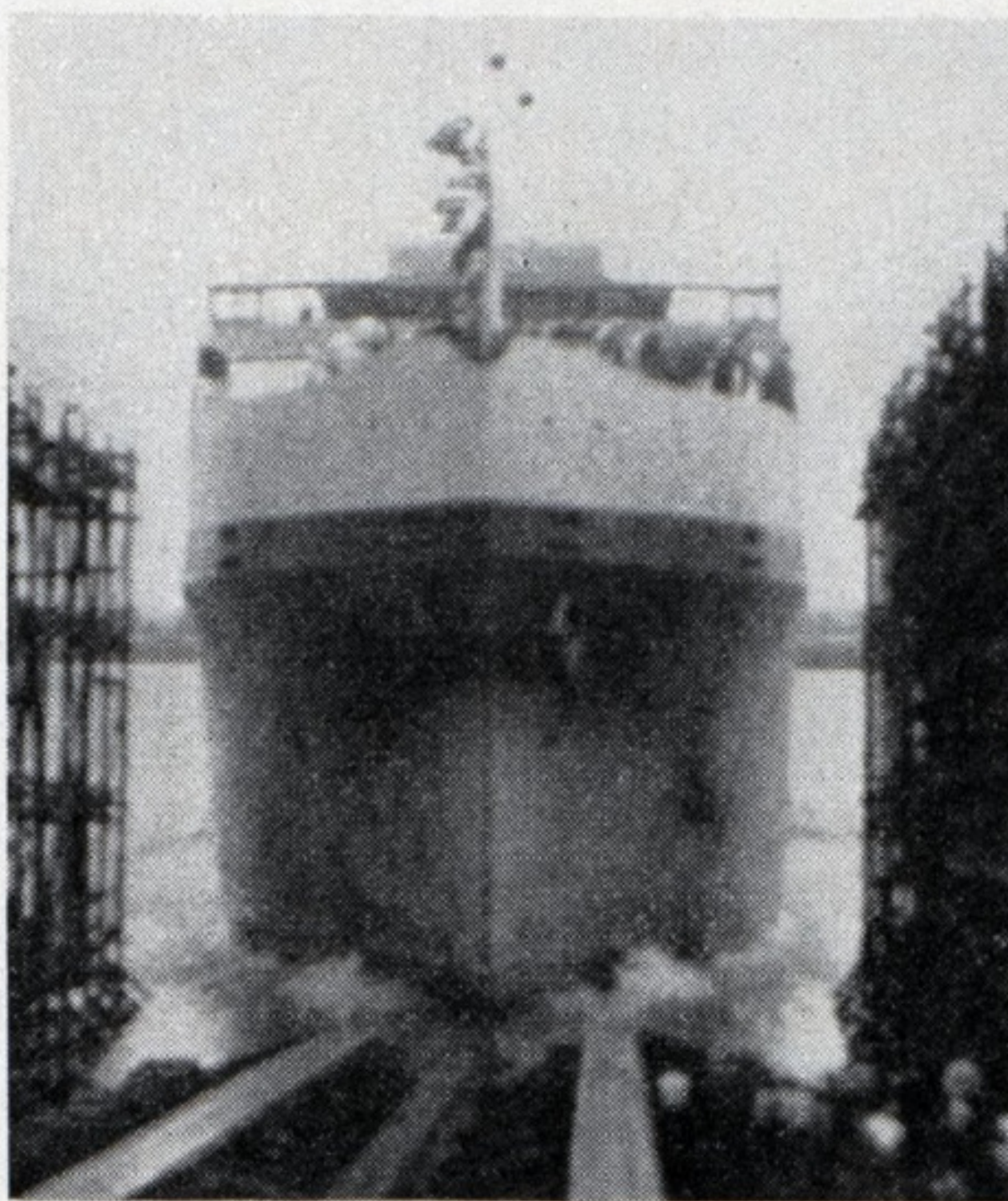
Of this amount, British and Irish owned vessels amounted to 314,957 tons. This shows an increase in loss over 1930 of 103,817 tons for steam and motor vessels and a decrease of 47,651 tons in sailing vessels.

Seatrain New York Carferry Launched At Chester

AN UNUSUALLY large gathering of persons prominent in shipping affairs attended launching Sept. 14 of the SEATRAN NEW YORK, the first of two ocean going carferries under construction at the Sun Shipbuilding & Dry Dock Co., Chester, Pa. for the Seatrains Lines Inc., New York. The launching was unique in one way in that the old traditional bottle of champagne was used for christening. The sponsor was Mrs. Joseph Hodgson, wife of Joseph Hodgson, vice president of the Seatrains Lines Inc. At a luncheon following the launching, John G. Pew, president of the Sun Shipbuilding & Dry Dock Co. presented the sponsor with a diamond studded platinum wrist watch.

Graham M. Bush, president of the Seatrains Lines, Inc. received a telegram of congratulations from President Hoover in which the President called attention to the novelty of design as indicating, "how resourcefulness and ingenuity of American designers and operators may facilitate the development of our invaluable ocean borne commerce." The second vessel, SEATRAN HAVANA will be launched Sept. 26. Mr. Brush complimented the engineers, officials and workmen of the Sun yard for their efficiency and reliability and declared that ships built at this yard are as good if not superior to any built in the world. The naval architect for the owner is Horace Thayer. Each ship will cost \$1,500,000.

An unusual feature was the high degree of completion of the SEATRAN NEW YORK at the time of launching. Her official trials are scheduled for Sept. 30 and it is expected that she will go into service in the first days of October. Her run will be from New York to Havana thence to New Orleans, returning to New York via



Seatrains New York Launched Sept. 14

Havana. The original vessel of this type SEATRAN NEW ORLEANS (fully described and illustrated in MARINE REVIEW Feb., 1929) was built in England and entered service between New Orleans and Havana in Jan., 1929.

The two new vessels are similar in line but larger and faster than the original vessel of this type which has aroused the interest of the entire shipping world by her efficient performance in the New Orleans-Havana service. The new vessels, like the original, will be used for transporting loaded freight cars, but will operate on the longer route out of New York. Each ship has capacity for one hundred railroad cars, equivalent to a mile long train. This number of cars can be placed on board in 10 hours, whereas an ordi-

nary freighter might spend a week in port.

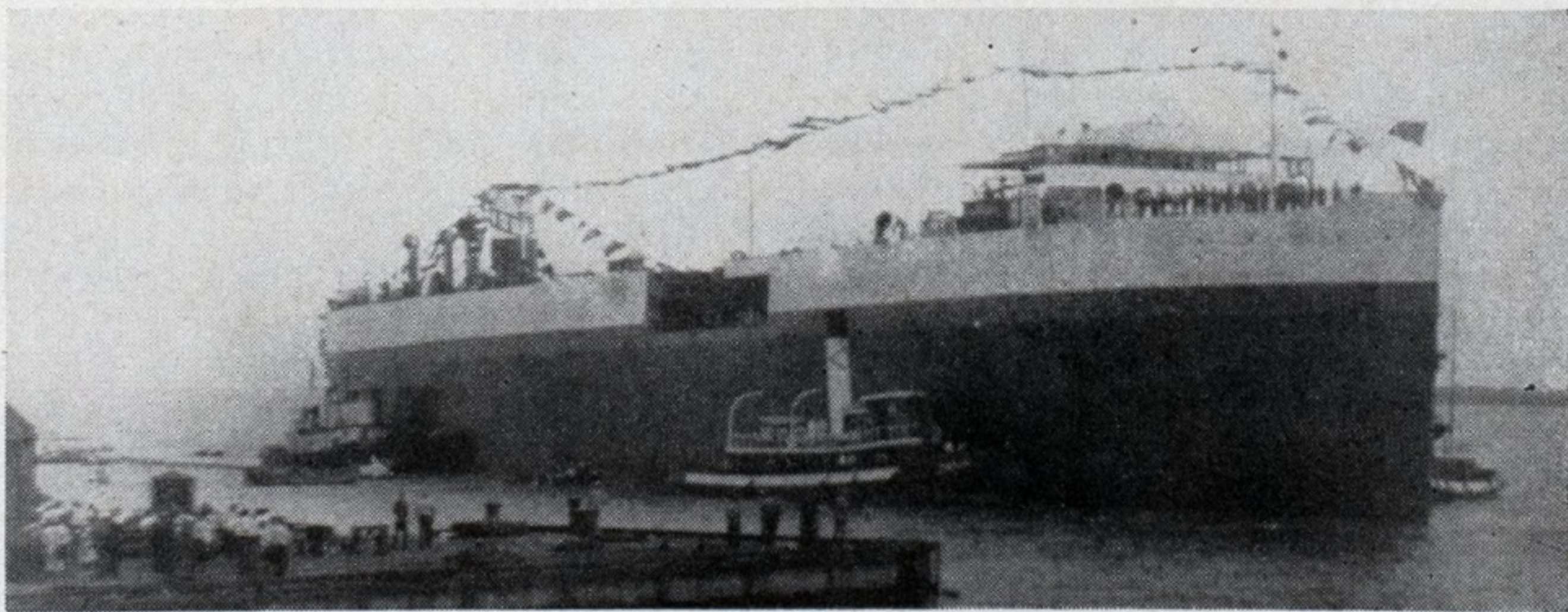
These vessels are not of the customary carferry type in which the cars are run from the shore rails on the car deck, but are large, well proportioned ocean going ships which have the appearance of tankers and are built on the Isherwood longitudinal system of framing. The loaded cars are lifted from the shore rails by a crane and placed aboard the ship on rails which are laid on four decks, removable hatch covers being used for each of the decks.

Terminal and handling facilities are now being completed in Hoboken, N. J. and the existing terminals in New Orleans and Havana will be utilized. The general characteristics of the vessels are length overall 478 feet; length between perpendiculars, 460 feet; beam molded, 63 feet, 6 inches; depth molded to main deck amidships, 38 feet, 3 inches; displacement, 13,745 tons; draft, 22 feet, 3 inches; deadweight, 8445 tons.

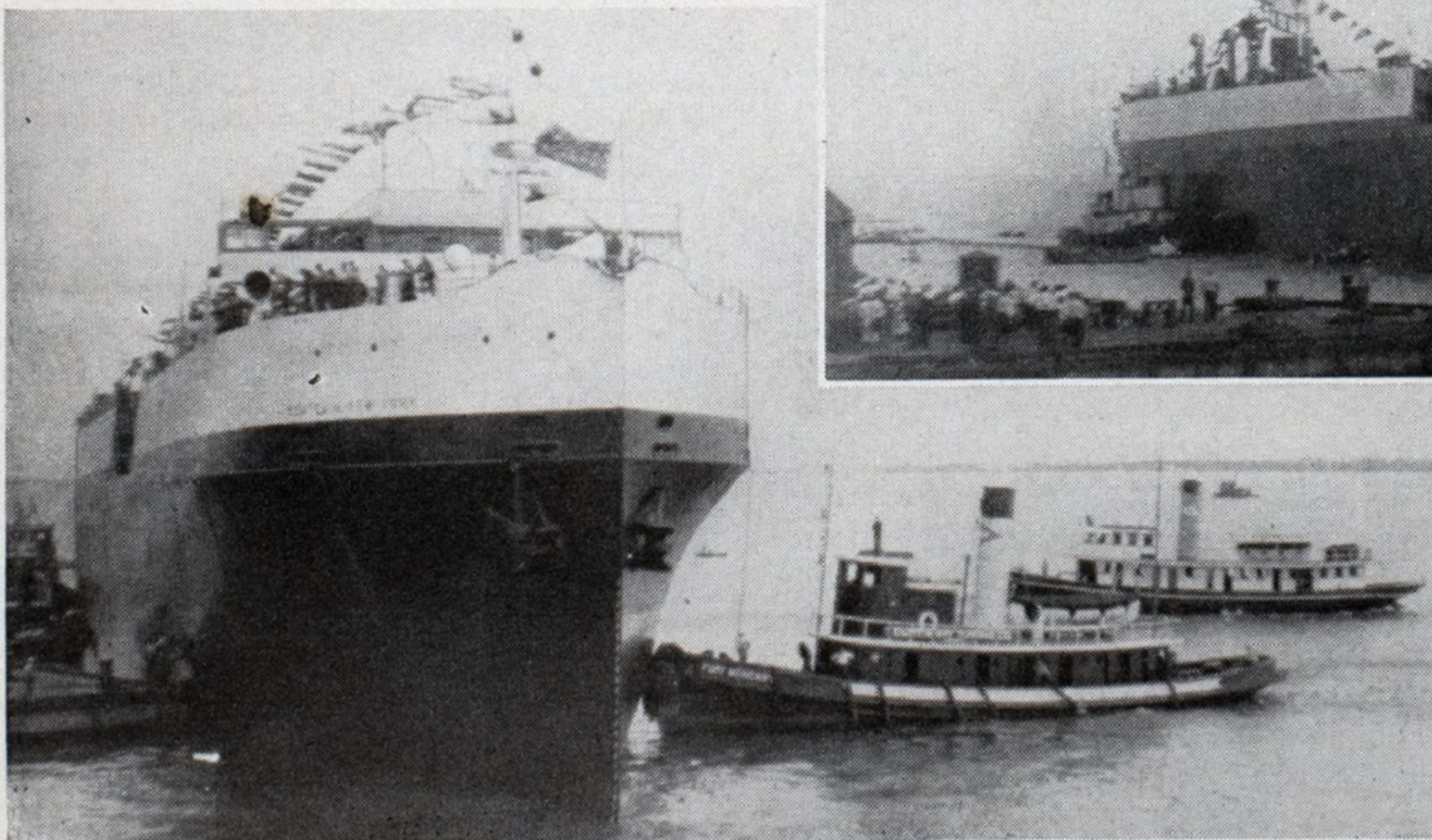
The vessels are of single screw, with cross compound De Laval steam turbines and double reduction gearing, driving the propeller shaft through a Kingsbury thrust bearing. These turbines are designed to develop a maximum of 8800 shaft horsepower at 110 revolutions per minute, giving a speed of 15½ knots. The propeller is of four bladed solid type of Slossum design, 17 feet, 9 inches in diameter. The rudder is of semibalanced streamline type.

Steam is provided by three Babcock & Wilcox watertube marine boilers of the latest improved design with convection type superheaters. The working pressure is 400 pounds per square inch, and the total temperature is approximately 700 degrees Fahr. The boilers are fitted for oil burning.

A complete illustrated article describing these vessels will be published in MARINE REVIEW for November.



S EATRAN New York, first of two 15½ knot ocean going freighters for transporting railroad cars from New York to Havana and New Orleans. Built by Sun Shipbuilding & Dry Dock Co., Chester, Pa. for the Seatrains Lines Inc., New York. Launched at 2:30 p.m. Sept. 14



Suggestions for Better Ship Design

to Increase Return on Investment

By A Naval Architect

THE passenger determines the design of a successful passenger ship, he is the final arbiter, the naval architect simply expresses in a floating structure the opinion of the majority as reflected by passenger receipts. Simple to state, but as the design of every ship is ultimately a compromise, rather difficult to execute. The interpretation of the ticket office votes will be premised on how to provide the most of what will sell at top prices and as few of those features for which there is at best but a poor market. And in addition the problem must be solved at an initial cost that will provide a good return on the investment.

In this country in order to insure a satisfactory return on the investment, we may have unduly stressed economy of operation and have often neglected the equally important factor of increasing revenue income. We have assumed the revenue and have endeavored to increase profits by improvements in operating economy.

This statement is general and is not true in all cases, especially in the extremely competitive North Atlantic passenger trade which is exceptional and where each line is striving to increase its patronage by providing every practicable feature for the comfort and pleasure of those who buy transportation.

Ways to Increase Revenue

Waste is truly abortive, and those who have prevented it by increased economy have done a good work, and there is more of it to do and it should be done. But loss of possible revenue is also a waste just as abhorant and just as much of a drain on the bank balance as the money spent without full return, even though we glibly console ourselves by saying we cannot lose that which we never had. To those of us who live by ships, owners, mariners, builders and naval architects it is as important to increase revenue as to increase economy of operation, for more revenue means more ships, more ships make more business and more business makes more money for each of us.

Revenue to the ship owner is from two main sources, cargo and passengers. The cargo side has been well studied, its revenue is large and there is little psychology to take account of. The passenger side is all psychology and with the possible ex-

ception of the North Atlantic passenger trade, seems to have been neglected, at least it has not been studied with the care that our great hotels and the retail and chain stores have given to it.

The passenger business is a retail business, it is a personal affair and the mass psychology in each line and locality is different though some general principles are applicable to all. Different types and classes of people use ships for different purposes and the mass idea for each class and for each purpose is different. The ship owner and his naval architect who can sense what the patrons want and what is more important sense what they are inarticulately demanding, will increase his fleet and make money.

Classes of Passenger Service

The main lines of passenger business can be classed: Excursion and day line, over night, Atlantic coasters, Pacific coasters, intercoasters, North Atlantic liners, Pacific liners, tropical liners, cruisers. The wants of the passengers in these services both expressed and dormant are different for each though when studied in detail there is much overlapping. Much of the ocean tonnage can be used interchangeably. When so used it is deficient in many ways when measured in terms of building up business. To find these requirements of business building in ships requires as much intelligent study as the subject has been given ashore, and while general conclusions for each class of ship can be determined from our knowledge of conditions it must be modified or adapted to suit local or specific conditions. The present article will be confined to day and night boats.

This lack of analyzing is particularly noticeable in excursion steamers and the result becomes apparent when we consider the whole field eliminating the lines doing a good business. We observe that its growth has not been anywhere near in proportion to the growth in population, wealth and leisure. While this stagnation can no doubt be attributed to the popularity of the automobile, the ship owner to a large degree and the naval architect also must accept some share of the responsibility.

A further reason which may have retarded the growth is the attitude of many owners and the ships' per-

sonnel in direct contact with the public. No attempt seems to have been made to create a personality for the ship. In these cases the fundamental fact is ignored that the patrons are seeking pleasure, are willing to pay cheerfully if they get it, but they are not buying transportation as such, they are not obligated to ride, and it should be recognized that herding, shouting, ordering, indifference, contempt, overcharging, is not making friends, not making repeat customers, not making unpaid salesmen who will recommend the ship or who will organize outings among their friends with the boat ride as the incentive.

There has been directly mentioned or indicated some of the possible reasons that are preventing the natural growth of the excursion and day line traffic in competition with the automobile, and it is believed much can be done to overcome this competition insofar as the ships themselves are concerned, and done without a prohibitive capital outlay.

Improvement in Ship Design

In the Wilson line ships, and in the MANDELAY and BEAR MOUNTAIN the superstructures are carried on steel pillars and girders, which are not sheathed, and while an ornamental finish has not been aimed at, satisfactory architectural effects can easily be attained if desired by the use of electric welding and coatings of the fireproof cement base paints which have an extensive use ashore and one of which to the writer's knowledge has been successfully used afloat.

The adaptation of the principles of steel building construction in the cases referred to has not increased the cost, but it has eliminated a great deal of fire risk, has reduced vibration, and what is most important from the revenue standpoint, that is the favorable impression on the patron, has provided a feeling of rigidity and solidness which is especially noticeable when the vessel docks.

A real peril in the operation of day line and excursion steamers is a tendency to crowd the rail. To naturally prevent this would make for improvement and increase safety. Everyone wants a clear unobstructed view from the shady side, wants to feel all the breeze, wants to clearly see an object of interest. Provision

for gratifying these desires are provided on the BEAR MOUNTAIN by the simple expedient of building the deck in terraces, the construction of the terrace being of course facilitated by the pillar and girder construction. On this ship there is no occasion to crowd the rail, one location is as good as another. Access from side to side is provided, but a sudden mass shift of passengers from side to side is prevented; climbing over the terraces slows them up. Even with capacity crowds, a list greater than 6 degrees has not been noted on the BEAR MOUNTAIN.

Day Coach and Pullman Car

The fact that excursionists are willing to pay for their pleasure has certainly been noticed, but the payment is not always made with a smile or with the conviction that it is for value received, nor has the fact been recognized that we have two classes in the United States, those who are willing to pay in order that they may demonstrate their ability to pay and the class who must get value received. This class idea is recognized by the railroads, where Pullman comforts and diners are provided for those who can pay and day coaches and sandwich men for those who must get material return for their money. Catering to this American characteristic on excursion steamers and day line steamers would open up another source of revenue without affecting the present patronage. Based wholly on the argument that patrons will buy that which pleases them and that the owners of day line and excursion steamers are in effect retail shopkeepers, dependent for their success in obtaining and retaining the patronage of a pleasure seeking public, a top side arrangement for the hull of an existing river steamer, is suggested that provides for the safety, comfort and pleasure of passengers and for additional revenue to the ship owner, at an initial cost not higher than would be paid for the usual construction.

A Reduction in Joiner Work

In this design, joiner work has been reduced to a minimum. Stairways are of wood and the trim is of wood. A deluxe deck has been provided where by terracing clear views are provided for all, even for those patrons who have bought private rooms. Revenue from this deck can be obtained in excess of the standard fare by a charge for the use of rooms, use of comfortable reserved chairs and cover charge in the veranda cafe. By constructing a band stand in the well half way between decks the same music will serve for dancing or diversion on two decks, and so serve for both the deluxe and the ordinary passenger at the cost of one band or orchestra.

The space below the main deck aft will be suitable for moving pictures and by locating the projection screen at the forward end the pictures will be visible only to those who have passed the box office. Some owners might also consider it advantageous to utilize this space for a swimming tank with dressing rooms at the sides. The construction is not necessarily expensive. Except for the ornamental railing trim and dome over the well it is the ships structure properly dealt with to obtain architectural effects.

A study of theaters, hotels and amusement places shows the trend of American pleasure ideas and a ship as indicated above would certainly retain the present patronage possibly converting some into the spending deluxe class and would also attract the spending class and the total patronage would surely be increased if there were visible evidence that the ship was safe in every way.

Design of Night Boats

The traffic on night boats has developed more nearly in proportion to the increase in population than has been the case with day line and

Carelessness in Design

MONEY is wasted in a poorly conceived and planned ship. Patrons are quick to recognize the possibilities of danger and to be annoyed, perhaps unreasonably, at any inconvenience they may experience due to a stupid arrangement on deck or in cabins. By combining the experience of the operator with the trained skill of the naval architect a great number of travelers can be accommodated in greater comfort for the same size of vessel with the same or less initial outlay.

With the same limiting condition and expenditure a ship can be produced that will draw and attract trade. Careful analysis and study of all the requirements will pay dividends to the owner. In the interest of good business every ship should have the benefit of competent planning.

Editor's Note

excursion boats, notwithstanding the competition of the railroads, which is due no doubt to the excellent management of all the night lines. These ships are the personal care of the high executives many of whom consider it their duty as well as a pleasure to welcome the ship at her dock in the morning and to remain at the office to see her away in the afternoon. These ships represented the highest development of the shipbuilders' art when they were built and because of the attention they have received are still masterpieces of shipbuilders' and ship joiners' work. The perfect discipline, neatness and order maintained allays any fear of the peril of the sea.

Because these ships have admirably done their work is no indication they are fully modern or represent any approach to ideals practicable with the material available, that they are not outgrown tools is due entirely to the excellence of their management. To continue to maintain growth in this traffic and to even increase its revenue is the natural aim of the owners and to this end the ideas of the patrons and their requirements should be studied and incorporated in new ships.

Night boats are almost essentially a vehicle of transportation for people who have somewhere to go and who trade the shorter time of trains against the increased comfort of the night boat. The majority are acquainted with the arrangement of the best hotels and desire and will pay for a good approximation of what they get ashore. These requirements are complete confidence in the ability of the crew, integrity of the ship, freedom of the peril of fire, comfortable beds, rooms directly connecting with the outside air, private baths and toilets and a first class cuisine. Except for the elimination of the peril of fire and the insufficiency of outside rooms the existing night boats fulfill all these requirements.

Great Lakes Night Boats

Two of the finest of the recent night boats ply the Great Lakes and the design shows that every development in the marine field has been utilized to obtain this result. In a paper prepared by Messrs. Kirby and Sadler as part of the proceedings of the Society of Naval Architects and Marine Engineers, 1925, the problem confronting the designers was fully discussed and it seems that the maximum result within the circumscription of marine practice was obtained.

These vessels are mobile floating hotels and insofar as the mobility and floatation are concerned are strictly problems to be solved by the naval architect and marine engineer in accordance with sound marine practice but when the hotel phase is studied

from a hotel standpoint they do not compare so favorably with the practice in hotel construction insofar as non-combustible construction and the proportion of outside rooms are concerned even though the expedient of opening rooms on long narrow passageways open at the ends is resorted to. To provide fire protection with a reasonable cost would require a complete departure from the accepted marine design of night boat with its deep canyons amidship, its galleries, ornate stairways and expensive joiner work.

A hotel confines its public ostentation to lobbies and dining room and possibly a ladies' room, and passages, neat but plain, lead from the elevators to the revenue producing rooms.

The successful ship owners have endeavored to learn what the public wanted and have provided it. Witness the large business the Wilson line has built up out of Philadelphia, Chester and Wilmington. Likewise the popularity of the MANDELAY and BEAR MOUNTAIN out of New York. The two latter ships it should be noted have new top-sides on old hulls. The conversion of the MANDELAY from the old car ferry EXPRESS was conceived by C. L. Dimon, a New York ship owner, and carried out by the Morse Dry Docks. The BEAR MOUNTAIN was converted from the burned HIGHLANDER by the Federal Shipbuilding and Dry Dock Co. from designs conceived and developed by George G. Sharp, naval architect, New York. The Hudson River Day line, while retaining in general the established design has maintained its popularity by attention to every detail and by uniform courtesy to patrons.

Appearance an Important Factor

Commercial development ashore, especially in the retail trade, makes the appearance of the goods a prime requisite, ranking equally with quality and price. As the HIGHLANDER before conversion solicited the same kind of patronage as the BEAR MOUNTAIN by comparing the appearance of the HIGHLANDER and of the BEAR MOUNTAIN the reader may readily form his own conclusions as to the sales appeal and the business building influence based on this single factor. It is interesting to also note that the HIGHLANDER not only was lacking in appearance but was somewhat tender, a serious fault in an excursion steamer, which was corrected in the BEAR MOUNTAIN while at the same time provision was made for the certification of 300 additional passengers.

In the solicitation of passenger patronage appearance while important is not the only feature that has to be reckoned with. It is necessary to take into consideration the fundamental mental attitude of the patron.

Almost without exception the patron of an excursion steamer, and to a large extent day line steamers, are seeking enjoyment, recreation and diversion. In other words they are pleasure seekers, a large percentage are children with parents or guardians. Being afloat carries with it the thrill of adventure, but while the thrill is pleasurable, at the same time there must be the absolute conviction that everything is safe, safe from upset, safe from fire, safe from sinking. Unconsciously the books they have read on the perils of the sea and more vividly the disasters that have occurred and been portrayed in every newspaper in the country, comes to mind and real fear takes the place of the enjoyable thrill. Such a mental attitude of the minds of many possible patrons is not a good business builder, too often these people cast a deciding negative vote in a group outing plan.

Safety in a First Requisite

How many excursion or day line steamers can honestly advertise safety? Perhaps 100 per cent safety is not possible to achieve, but the ship owner, ship builder and particularly the naval architect could study with profit the developments of fire protection ashore. The Wilson line in its steamers STATE OF DELAWARE and STATE OF PENNSYLVANIA has recognized this and had its naval architect study the matter with the result that a large amount of combustible material, usually customary, has been eliminated by substituting steel with a net reduction of weight and first cost. The same line when rebuilding the top sides of the steel steamer CITY OF CHESTER felt justified from the experience on earlier ships to carry the fire protection even further, and the designer was able to utilize the additional strength of the fire proof steel and adaption of modern building construction practice to increase the certified passenger capacity over 30 per cent. There is no doubt that many lines use meticulous care in protecting their passengers from peril insofar as it is humanly possible with the tools they use, but in the construction of day line and excursion steamers, a definite effort to eliminate all combustible material possible and to properly subdivide the hull has not been made, at least to such an extent that the matter could be referred to in advertising or to present visible evidence to the patrons that such protection is afforded.

The failure to cater to the mass psychology in the matter of allaying the feeling of peril may be the main reason for the failure of the excursion and day line steamer business to grow in proportion to the increase of population, wealth and leisure.

The possibilities of improvement in the lake boats referred to having

of course a proper regard for capital cost apparently lies in the study of the solutions of similar problems ashore and in the solution indicated herein the surprising result is that not only can real fire protection be obtained at no increase of cost or weight over that now incurred but that an increase of revenue is provided by increasing the number of rooms without decreasing the useful floor space and every room is directly connected with the outside air, is in fact an outside room.

Give More Light and Air

When it became necessary ashore to economically increase the north light in factory and workshop, the saw-toothed roof was developed. In seeking to increase outside rooms on ships the veranda arrangement was conceived which is but a modification of the saw tooth design.

The design study of a night boat to meet the requirements laid down was developed in consideration of possible use of an existing hull with its propelling machinery. In this design the problem was approached in the same way an architect would approach the design of a hotel.

Modern hotel construction as well as its economics of management leads to grouping and duplication of units with resultant economy of invested capital and its later administration. The design contemplates the use of Kolemair or Plymetal in the construction of the partitions both being standard material ashore in fireproof construction, and these are arranged so as to stiffen and support the steel skeleton structure supporting the decks. The plumbing is concentrated, the public spaces are concentrated, and that fire doors can be fitted to absolutely isolate any portion of the ship.

On Standardizing Construction

With a complete conception of the design from the beginning, the entire topside work can be standardized and so permit of its production under manufacturing conditions and its assembly and erection at the shipyard in an orderly economic manner. By the adaption of the principles outlined above it has been found practicable to provide on a ship 417 feet long, sleeping accommodations for over 1000 people in 514 rooms with a fair proportion of private baths, a commodious dining room, and a proper proportion of public spaces. This plan provides for every demand of the patrons and the most important feature for the owner inasmuch as the revenue possibility is greater than any existing arrangement on a ship of this size. A careful study indicates that by a layout similar to the one proposed the lake ships referred to above could comfortably accommodate about 1700 passengers.

R. L. Hague, Diesel Tanker Built in Italian Yard

TO THE Monfalcone Shipyard, Trieste, Italy, belongs the distinction of delivering the first of the group of nine motor tankers ordered in July, 1931, from European builders by the Standard Shipping Co. It will be remembered that three of these tankers were awarded to the Monfalcone yard of the Cantieri Riuniti dell'Adriatico, two to Krupp, two to Deutsche Werft and two to the Brenner Vulkan yard. The first of the Italian built tankers was named R. L. HAGUE, the well known vice president of the Standard Shipping Co. The vessel's principal dimensions are as follows:

Length on designed waterline, ft., in.	535 0
Length between perpendiculars, ft., in.	520 0
Maximum breadth, feet, inches	70 0
Depth at upper deck, ft., in.	38 0
Design draft, molded, ft., in.	28 8 $\frac{3}{4}$
Displacement, tons	23,415
Deadweight carrying capacity, tons	17,800

The vessel was built to the highest classification requirements of the German Lloyd and Lloyd's Register of Shipping. The hull is constructed on the Isherwood system with two longitudinal bulkheads which, together with a number of transverse bulkheads, divide the cargo space into nine groups of center and wing tanks. Five of such groups are located forward of the pump room and four between the pump room and the machinery spaces. The ship's cross bunkers are located immediately abaft of the last cargo tank and separated therefrom by a cofferdam. The space between the collision bulkhead and the forward tanks has been fitted for general cargo. The lower part of this space contains an auxiliary pump room and two water ballast tanks.

The propelling machinery consists of two 6-cylinder two cycle single-acting solid injection Fiat diesel engines of 600 millimeter bore and 1100 millimeter stroke, each rated 2250 shaft horsepower at 120 revolutions per minute and are guaranteed for an overload capacity of 2500 shaft horsepower at

125 revolutions per minute. While the Fiat company has been building small solid injection engines for several years, the main propelling units of the R. L. HAGUE are the first large powered airless injection engines built by this company. During extensive shop tests they operated smokeless from fractional loads up to 40 per cent overload. These engines are very compact and weigh less than 200 pounds per shaft horsepower.

Each main engine exhausts direct into a Clarkson thimble type boiler, which also acts as a silencer. These two exhaust boilers supply sufficient steam to operate all the auxiliaries required at sea. The steam needed for port use is supplied by two Scotch boilers of 2500 square feet heating surface, which are located on a flat at the after end of the engine room.

Developed 13 Knots on Trial

Air for starting and maneuvering is furnished by a compressor of 300 cubic feet of free air per minute, driven by a 140 horsepower Fiat engine running at 275 revolutions per minute. There is also a steam driven stand-by compressor of 25 cubic feet per minute. Likewise, all other deck and engine room auxiliaries are steam driven.

The trials of the R. L. HAGUE were held on June 27 under supervision of representatives from the owner and classification societies. It is reported that the vessel fully loaded developed a speed of nearly 13 knots over the measured mile, thereby materially exceeding the contract requirements. The photograph reproduced herewith was taken during the official trials and clearly shows the vessel's pleasing lines and trim appearance.

The new vessel has been assigned to the Baltic-American Petroleum Co., Danzig, a subsidiary of the Standard Oil Co. of New Jersey. The other two sister vessels are in an advanced stage of construction. It will be remembered

that the Monfalcone Shipyard has also built for the same owner the two Fiat motor tankers TRANSOIL and J. A. MOWINCKEL.

Propeller Club Convention

What promises to be one of the finest annual conventions of the Propeller Club of the United States will be held at the Cavalier hotel, Virginia Beach, Va. on Oct. 16, 17 and 18. The attendance will include 500 delegates, their relatives and friends and a number of distinguished guests representing the political, business and maritime life of the nation.

Representative Edwin L. Davis of Tennessee will be one of the principal speakers. The convention program is in charge of a committee consisting of G. F. Blair, district director of the United States shipping board and president-elect of the Propeller club of Hampton Roads; W. A. Cox port director of Hampton Roads and Leon Seawell, vice president of the club.

Arthur M. Tode of New York, national president of the Propeller club will preside at the various business sessions which will begin on the morning of Oct. 17. He will be assisted by the national secretary Harold J. Harding of New York.

Arrangements are being made for the chartering of a special steamer to transport delegates from New York. Baltimore is expected to send a delegation of at least 100 members aboard a second chartered vessel. Many tours and special entertainment features are being arranged for the three-day session, including a trip to the Newport News Shipbuilding & Dry Dock Co.

The board of engineers for rivers and harbors announces the publication of a revised report on the Port of Wilmington, Del. and ports on the Delaware river below Philadelphia. This report is designated as part 2 of *Port Series Report No. 4* and is one of a series covering the principal ports of the United States, prepared and published by the board in co-operation with the bureau of marine development of the United States shipping board.



Twin Screw Diesel Tanker, R. L. Hague built by Cantieri Riuniti dell'Adriatico for Standard Shipping Co.

Dustpan Type Suction Dredge Dundee

Recently Completed for U. S. Engineers

THE dredge DUNDEE is the first to be completed of a group of three dredges which the Dravo Contracting Co., Pittsburgh, has under contract for the United States engineer in the St. Louis district. The design of these dredges is the result of exhaustive investigations made by Col. George R. Spalding, division engineer, Upper Mississippi valley division, and Major W. A. Snow, district engineer for the St. Louis district, whose recommendations determined the type and size of dredge most suitable for the requirements in this particular section of the river system. The details of design were worked out in the office of the chief of engineers, marine design division at Washington, under the direction of C. H. Giroux, head engineer.

A steel hull self-propelled, "dust pan" type suction dredge using oil fired watertube boilers, steam turbine driven generators; electric motor for dredge pump drive and western river type of stern wheel machinery for propulsion was decided upon. The DUNDEE is 224 feet overall, 196 feet

length of hull, 44 feet 4 inches beam and 7 feet deep, with a draft of 4 feet 2 inches forward and 4 feet 1 inch aft.

Of steel construction, the hull is flat bottomed, with scow bow and stern, the bow being recessed to accommodate the ladder. It is longitudinally framed on deck and bottom and transversely framed at sides. Strength and subdivision are provided by four longitudinal and five transverse bulkheads.

The dredge pump is of special design centrifugal, volute type as developed by the United States army engineers for this work. It has 24-inch suction and discharge connections and runs on S. K. F. self-aligning roller bearings fitted with S. K. F. deep groove ball bearing for thrust absorption. The pump shaft is rigidly coupled to a 1000-horsepower Westinghouse 250 volt direct current motor arranged to carry its full rated load at any speed between 200 and 245 revolutions per minute, also to produce a 25 per cent increase in speed and output with a corresponding increase in head on the pump.

Current for the dredge pump motor

is obtained through a special panel direct from the generator without passing through the main switchboard. This generator drives the dredge pump motor only and is an 800 kilowatt 250 volt direct current Westinghouse open type with a separately excited shunt field and mounted on S. K. F. self-aligning roller bearings. The speed range of the pump motor is obtained by means of field control.

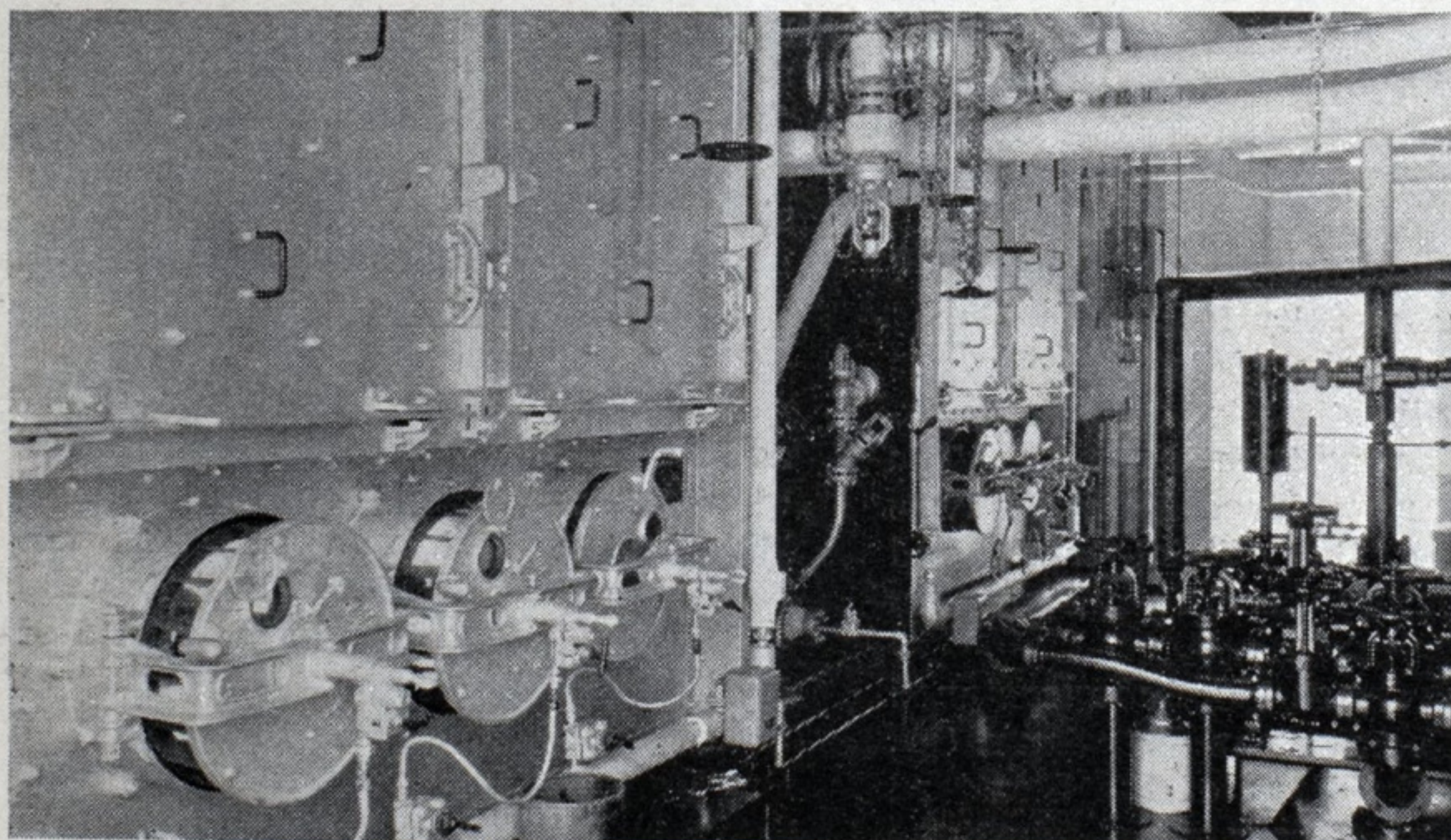
The windings and control of the generator and motor are such that their combined inherent characteristics will automatically cause the motor to increase its speed whenever the head on the pump is increased due to plugging or other causes. This maintains a practically constant torque on the pump shaft with an increase in horsepower proportional to the increase in speed and voltage.

Current for field excitation is obtained from a 250 kilowatt, 230 volt, direct current open type Westinghouse generator mounted on S. K. F. self-aligning roller bearings. This generator is of the three wire type, producing 230-volt current for the jet pump motor and 115-volt current for field excitation, auxiliaries, etc. The 115-volt circuits are protected by a 25 per cent balance coil.

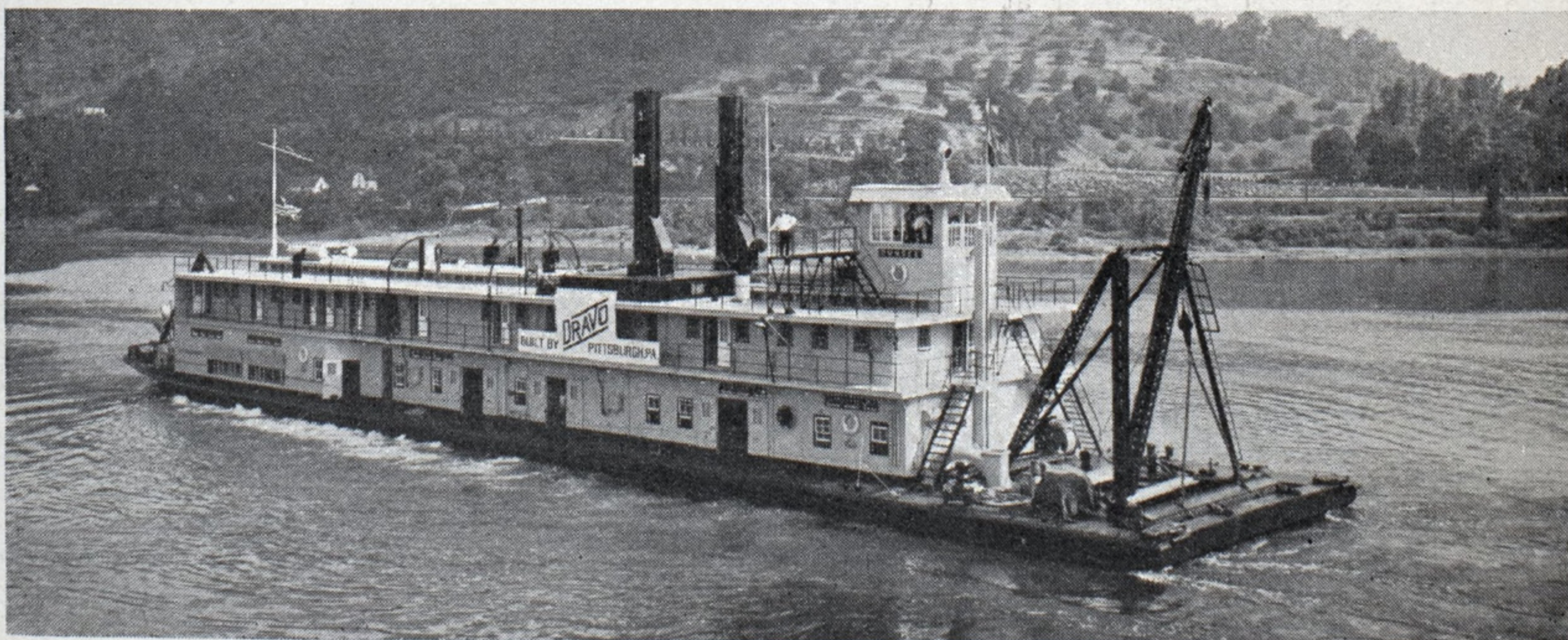
Suction of the main dredge pump is divided, each head drawing from half the 28-foot long suction head. This head is hung on trunnions and can dig to a depth of 20 feet.

To assist in breaking up the sand and gravel to be dredged a 3-stage Warren 5-inch centrifugal pump driven by a 200-horsepower, 230-volt, direct current, Westinghouse motor furnishes 1000 gallons of water per minute at 225 pounds pressure to 36 jetting nozzles at the suction head.

Forward or ahead motion of the dredge is obtained by two 8½ x 8



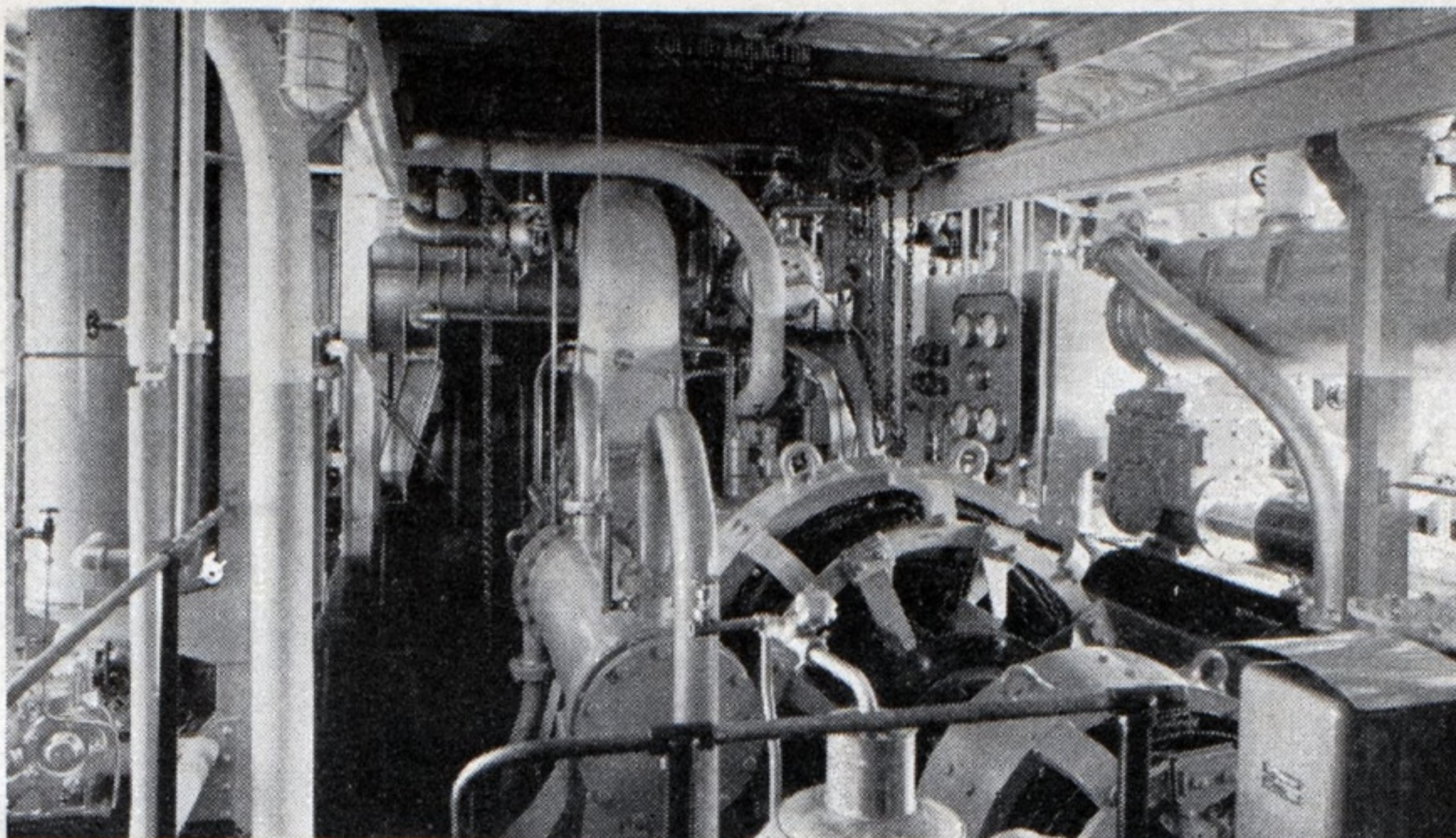
Self propelled, dust pan type suction dredge Dundee recently completed for United States engineers, St. Louis district. Above, boiler room on this dredge



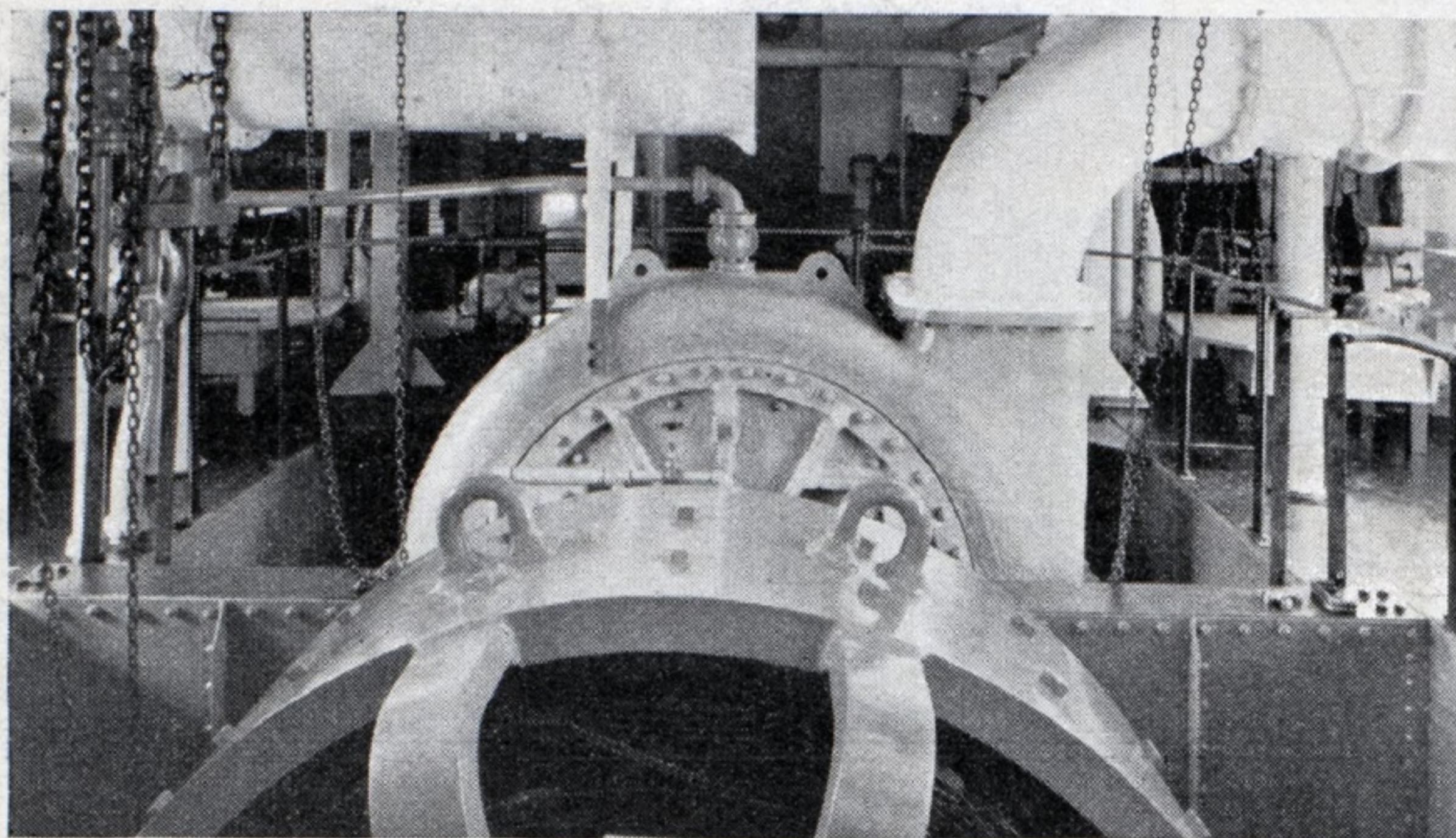
double and quadruple geared Lidgerwood hauling winches having speed range of 2 to 10 feet per minute at slow speed and 10 to 50 feet per minute at high speed. These winches have a capacity for 3000 feet of 1-inch diameter steel cable and a test load of 90,000 pounds pull at the 10 feet per minute speed; and are fitted with auxiliary drums, one for handling the dredging ladder and one for the anchor spud.

To assist in removal of snags, etc., there is installed a 6-ton derrick on the starboard bow. This is operated by a 40-horsepower double drum Clyde electric hoist.

For general handling of lines two



Generator room on the dredge Dundee



Pump room—electric motor driving 24-inch centrifugal suction pump

Lidgerwood 6¼ x 8 capstans and two Lidgerwood 4 x 6 gypsies are installed.

Power for both the 800-kilowatt and 250-kilowatt generators is obtained from a Westinghouse turbine and reduction gear unit in which the turbine speed of 5000 revolutions per minute is reduced to the generator speed of 720 revolutions per minute. The turbine operates with steam at 300 pounds and 100 degrees superheat and exhausts into a 27½-inch vacuum produced by a C. H. Wheeler condensing plant, consisting of 2600 square feet condenser, an electrically operated circulating pump, electrically operated condensate pump and twin tube air ejector complete with inter and after cooler.

Auxiliary lighting and power service is provided by means of a 50 kilowatt Westinghouse geared turbine generator, a 15 kilowatt Engberg generator driven by a 7 x 6 single vertical engine. A 1-1½ kilowatt Kohler automatic gasoline engine generator is also provided for use when both boilers are down.

Steam is generated by two Foster-Wheeler sinuous header type watertube boilers having 2650 square feet of heating surface each, built for 315 pounds working pressure and fitted with Foster-Wheeler convection type superheaters at the top of the first pass. These boilers are complete with Diamond soot blowers and Coen oil burning system having 3 Coen burn-

ers per boiler. The necessary draft is obtained from a No. 4½ Buffalo Forge conoidal fan in each uptake. These fans are electrically driven and as a precaution against flare backs the current for the motors is taken through Ruggles-Klingeman solenoid operated valves placed in the fuel oil supply lines to the burners. Any interruption in the current causes these valves to close. The division wall of the valve is drilled so that in the closed position sufficient oil is passed to maintain a standby fire only.

Particular care has been taken to provide complete auxiliary equipment

General Particulars

Owner	United States War Department
Builder	The Dravo Contracting Co.
Launched	May 5, 1932
Completed	July 14, 1932
Length overall, feet, inches	224 0
Length between pp., feet, inches	196 0
Beam molded, feet, inches	44 4
Depth molded, feet, inches	7 0
Draft, aft, feet, inches	4 1
Draft, forward, feet, inches	4 2
Displacement loaded, tons	946
Bunker fuel, oil, tons	69
Speed, statute miles per hour	9½
Propelling engines, two horizontal tandem compound condensing, 15 x 30 inches x 7 feet; total horsepower, 700; r.p.m. of stern-wheel 21 to 26.	
Boiler, oil burning, watertube	2
Main generator, kilowatts	1050
Main motor, horsepower	1000
Auxiliary generators, one 50 k.w., one 15 k.w.	

including C. H. Wheeler 500 square feet auxiliary condenser; Worthington reciprocating pumps; Ross feed water heater; Griscom-Russel grease extractor, evaporator and distiller; Brunswick-Kroeschell refrigerating unit, etc.

Propulsion is obtained from a pair of Nordberg tandem compound horizontal engines having 15 inch and 30 inch bore with a stroke of 84 inches. They take steam at 305 pounds pressure plus 100 degrees superheat and produce up to 26 revolutions per minute of the stern wheel. This wheel has a diameter of 18 feet, a length of 26 feet 6 inches and is fitted with 14 buckets 30 inches wide.

Trials held in the Ohio river at the builder's plant showed a still water speed of 9½ miles per hour.

Quarters are all on the upper deck and are ample to accommodate the complement of 48 men. In addition to the usual spaces for sleeping quarters, galley, pantry, cold storage rooms, laundry, radio room, ship's office, etc., both officers and crew have a ward room as well as a mess room. This arrangement in association with the full cabin length ventilating skylight, the McQuay copper tube steam heating system, the Ray oil burner equipped Elisha Webb range, hot and cold water to all toilets and a cold water drinking system assure the crew of living conditions equal to any on the rivers.

Since delivery of the DUNDEE to the government at St. Louis July 24 actual operating tests in the Mississippi river show results of from 300 to 1000 cubic yards per hour, the output varying with the type of material moved, presence of snags, depth of cut, etc. In general the output is in excess of those anticipated and the vessel is proving satisfactory in every way.

The two dredges now under construction are named SAINTE GENEVIEVE, and GRAFTON. The first of these, it is expected will be launched Oct. 1, and completed Nov. 15, while

the second is to be launched Nov. 1, and completed Dec. 15.

These two dredges are generally similar to the DUNDEE in design and construction but are of larger hull size and greater power. They are 200 feet in length, between perpendiculars 47 feet 10 inches in beam and 8 feet in molded depth. The main propelling engines have cylinders 16

and 32 inches in bore and 84 inches stroke. The main dredge pump motor has been increased to 1200 horsepower, even though the pump size has been reduced to 20-inch diameter suction. This greater horsepower with reduction in pump size will enable these two dredges to use a longer discharge pipe.

Essentially, the difference between

these two later dredges and the DUNDEE, other than increase in horsepower, is that they are fundamentally cutter head dredges instead of the dust pan type. It is interesting to note the design has been so arranged that at a future date the cutter head ladder may be removed and a dust pan type ladder installed, in which event the dredge pump will be 28 inches.

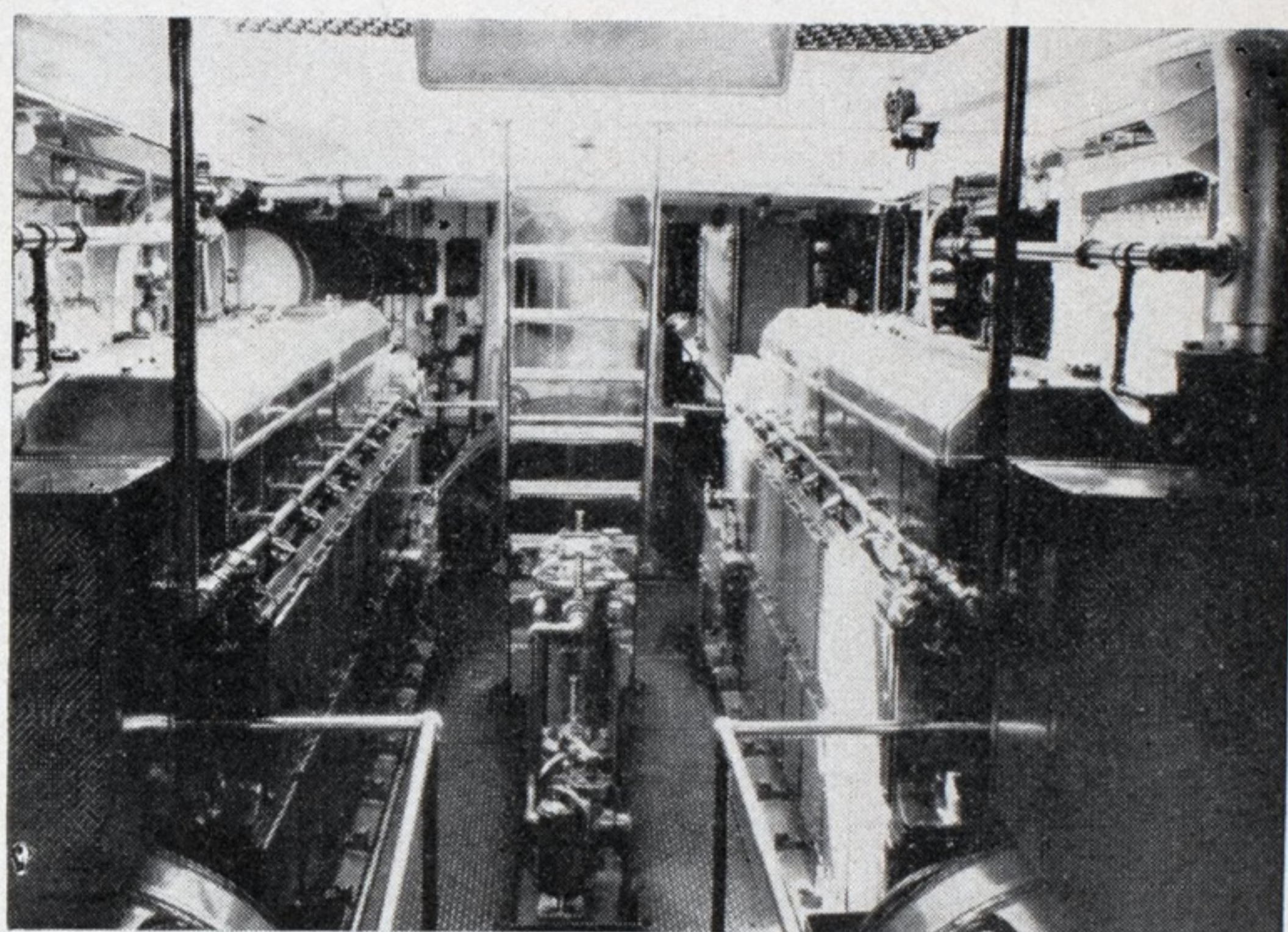
Single Screw Diesel Electric Tug Dearborn

ABILITY to absorb the full horsepower at reduced revolutions is one of the conspicuous advantages of electric drive for a tug. In this manner a heavy boat can make use of its maximum horsepower in maneuvering without sacrificing engine efficiency. By using the Ward-Leonard system of control the tug can be operated from the pilothouse or the engine room, giving the pilot at all times complete and immediate control of operation.

These features are exemplified in the single screw diesel electric tug DEARBORN, designed by Henry J. Gielow, Inc. for the Ford Motor Co. and built by the Great Lakes Engineering Works, River Rouge, Mich. The DEARBORN was launched on June 15, and completed July 20. She is a substantially constructed steel vessel with a length overall of 85 feet; length between perpendiculars, 75 feet; breadth molded, 21 feet; depth molded, 13 feet; draft extreme, 12 feet. The gross tonnage is 109 and the net tonnage, 65. The bunker fuel capacity in diesel fuel is 15 tons. She has a speed of 12 miles.

The vessel is designed as a harbor tug and has no accommodations for the crew. The main propelling power is supplied by two Cooper-Bessmer diesel engines each of 330 horsepower and each directly con-

Engine room of the diesel electric Tug Dearborn. Two Cooper - Bessmer Diesel engine generating sets supply current for one 500 horsepower Westinghouse propelling motor

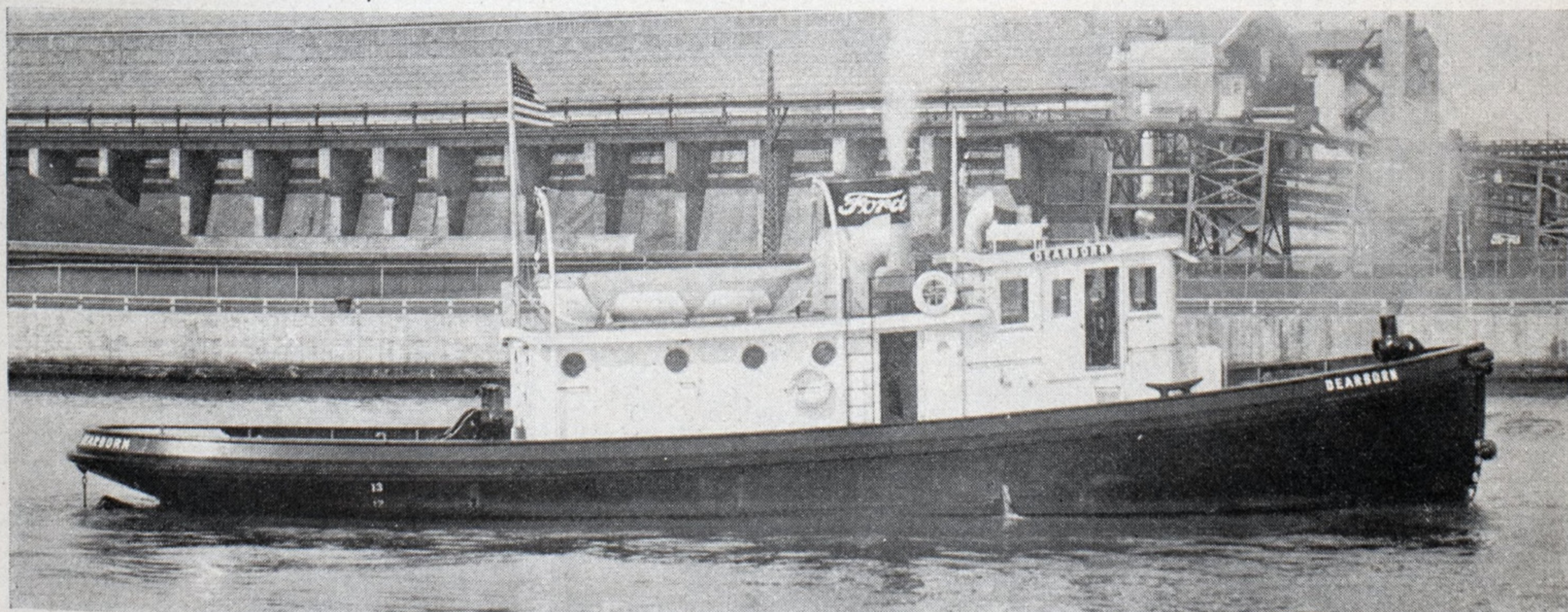


nected to one Westinghouse Electric & Mfg. Co. electric generator of 205 kilowatts capacity. The current so generated is supplied to one Westinghouse propelling motor of 500 horsepower directly connected to the propeller shaft through a Kingsbury thrust. The propeller is of solid cast steel with four blades and is 8 feet 6 inches in diameter and 10 feet 6 inches in pitch.

For auxiliary power there is a 2-cylinder Hill diesel engine direct connected to a 7½ kilowatt generator, rotary fire and bilge pump and auxiliary air compressor. The steering gear, supplied by the Superior

Iron Works, is combined hand and electric drive. The pumping equipment consists of one bilge pump, one circulating pump for the heating system, and one fuel oil transfer pump, all supplied by the Westco Pump Corp. For hot water heating there is one oil fired boiler made by the American Radiator Co. This boiler is piped for radiation to all compartments.

During trials, when developing the design shaft horsepower of 500, the propeller turned at 124 revolutions per minute while the boat was running free, and 110 revolutions per minute when tied to the dock.



Single Screw Diesel Electric Tug Dearborn built by the Great Lakes Engineering Works for the Ford Motor Co.

French Line Will Continue Building Super Liner

By Vincent Delport

AT THE annual general meeting of the stockholders of the Compagnie Generale Transatlantique, the leading French shipping concern, the annual report disclosed that for the financial year 1931 there was a loss of 368,991,573 francs (approximately \$14,400,000). Already in the previous year, 1930, a loss of 30,423,079 francs (\$1,190,000) had been sustained; therefore, the total loss to date is 399,414,653 francs (approximately \$15,650,000).

During the year 1931 the company had to face three problems: to keep the company going; to effect immediate and substantial economies; to intensify commercial activities. The efforts of the directorship were made with the co-operation of the state, and endeavors were made to facilitate the financial position by reducing debts and extending periods of payment.

The report states that the whole world is suffering from the uncertainty of the general financial situation, from the increased tariff barriers, and from the restriction of foreign trade by means of quotas.

Vessels Out of Commission

On Jan. 1, 1932, 38 vessels from the company's fleet, representing 206,131 gross tons out of a fleet of 90 vessels with a tonnage of 671,780 tons, were put out of commission; and at the time of the annual meeting, which was held on Aug. 2, eleven more vessels were put out of commission.

Considerable economies have been effected in the management of the concern; and provisional figures show that during the first half of 1932 the expenditure of the company was reduced by 95,000,000 francs (\$3,700,000) in comparison with the expenditure for the first half of 1931.

Referring to the construction of the liner, to be named PRESIDENT DOUMER, which is now on the stocks, it is stated that this vessel was ordered at the end of 1930, and construction was commenced in January, 1931, to satisfy the undertaking given by the company in its contract with the state. This vessel, which will have a length of 313 meters (1026 feet 11½ inches), a width of 36 meters (118 feet 1½ inches), a gross tonnage approximately 75,000 tons, a draft of 11.16 meters (36 feet 7½ inches), and a speed which may exceed 28 knots, is sched-

uled to be put into service in 1934. This liner will be able to accommodate more than 2000 passengers comfortably, and is intended to ply between France and New York.

To Continue Building Super Liner

In view of the distressing conditions now prevailing, the question has been discussed whether the construction of this vessel should be suspended, and it has been finally decided to carry on. Already 400,000,000 francs (\$15,600,000) have been spent, and the financing of the building of the vessel is guaranteed by the French government.

It is pointed out that competitive countries have recently been forging ahead in this direction. Italy is in possession of two super-liners of about 53,000 tons, the REX and the CONTE DI SAVOIA, which enables the line to maintain a six-day service between Mediterranean ports and New York. The performance of the German EUROPA and BREMEN are well known. While in Great Britain work is temporarily suspended on the superliner, which was started by the Cunard company, it is expected that eventually this ship will be completed. There are, therefore, a number of fast vessels of large size plying across the Atlantic, and it is necessary for the French company to operate vessels of similar importance if the Compagnie Generale Transatlantique is to maintain its position on the most important route in the world.

Safety Measures Discussed at Annual Meeting

DURING the week of Oct. 3 to 7, many delegates from the marine industry of the United States will meet at the Wardman Park and the Shoreham hotels in Washington, to consider practical, co-operative methods for the promotion of health and the reduction of accidents in this industry.

This program will be conducted by the marine section of the National Safety council, as a part of the twenty-first annual safety congress and exposition. The general chairman of this section is John S. Hunter.

The marine industry for 1931 showed an encouraging increased interest in programs for accident control. A total of 55 organizations with 62,000 employees who worked 153,000,000 man-hours during the year reported their

accident experience to the National Safety council. This is a marked increase over the 28 units with an exposure of 50,000,000 man-hours which reported for the previous year.

In the total the marine industry has one of the highest accident frequency and severity rates among all industries. For 1931 there were an average of 24.28 accidents per 1,000,000 man-hours, and an average of 2.87 days lost per 1000 worked. This puts the industry, among the 28 major industrial groups, in 23rd place in frequency of accidents and in 24th place in severity of accidents.

The highest accident frequency rates were among liners, harbor equipment establishments, and in shipbuilding and repair plants. The lowest frequency rates were among harbor equipment, stevedoring, and tanker establishments. The highest severity rates were among liners and tankers. Only a few marine units which reported showed improvement during 1931 in both frequency and severity of accidents. However, a number of units made exceptional records during the year, proving that organized accident prevention activities will bring results.

The program of the marine section will begin Tuesday morning, Oct. 4, with "opening remarks" by General Chairman John S. Hunter. There will be election of officers and the following additional features: *Is Maritime Safety Profitable?*, by A. R. Bush, past general chairman; *Medical Aspects of Safety Aboard Ships*, by John Wright, claims manager, Export Steamship Corp.; an address by C. H. Flathers, insurance manager, Eastern Steamship lines. There also will be a discussion of 1933 safety contest rules.

The Wednesday morning session will include papers on *Ship's Personnel with Reference to Safety*, by H. W. Proom, claim agent, American Diamond lines; *Gas Freeing and Cleaning Cargo Tanks*, by A. B. Butterworth, president Butterworth System; *Emergency Illumination and Signalling*, by A. F. Hubbard, president International Flare-Signal Co.; *The Training of Officer Personnel for the Merchant Marine*, by Capt. J. H. Tomb, United States navy, retired, superintendent, New York Merchant Marine academy. Also an address by F. M. Hobson, bureau of construction and repair, United States navy department.

The Thursday morning session will include the following program: *Ventilation of Diesel Engines and Motor Rooms*, by A. M. Tode, consulting marine engineer; *Safety From An Operator's Point of View*, by Commander B. C. Edwards, United States Navy retired, port engineer, Grace line; an address by D. N. Hoover, supervising inspector general United States steamboat inspection service; and *Data on Marine Section Safety Contest and Awarding of National Safety Council Trophies*, by A. M. Tode.

The author, Vincent Delport, is manager of the London office of the Penton Publishing Co., publisher of MARINE REVIEW.

Chief Constructor Selected to Take Office Oct. 1

ON AUG. 27, Charles Francis Adams, secretary of the navy, announced the selection of Capt. Emory S. Land, C. C. U. S. N. as chief constructor and chief of the bureau of construction and repair. During tenure of this office Captain Land will hold the rank of rear admiral, construction corps, United States navy. He succeeds Rear Admiral George H. Rock, C. C. U. S. N. who retires from active duty on Oct. 1.

Immediately prior to his appointment as chief constructor, Captain Land served as head of the division of plans and estimates in the office of naval operations at Washington. Born in Canon City, Colo., Jan. 9, 1879, he was appointed to the Naval Academy from Wyoming in September, 1898. He graduated from the Naval Academy in 1902 and received his commission as ensign. After a tour of sea duty he was detailed to take the post graduate course in naval architecture at the Massachusetts Institute of Technology where he graduated in 1907 with the degree of master of science. He is the first naval officer trained at the Massachusetts Institute of Technology to be appointed chief constructor of the navy.

In 1904, he was appointed assistant naval constructor with the rank of lieutenant, junior grade; in 1912 he was commissioned naval constructor with the rank of lieutenant. He was promoted to lieutenant commander, construction corps, Aug. 29, 1916; to commander, construction corps (temporary) in October, 1917; to commander, construction corps (permanent) Jan. 1, 1921 and captain, construction corps, in 1923.

Served Under Admiral Sims

From July, 1918 to March, 1919 he served on the staff of Admiral Sims. He also served under Admiral Benson and Admiral Bullard on a special mission to Pola between the Austrian and German armistice. During the remainder of the World war he was on duty at the bureau of construction and repair, navy department, Washington. He was awarded the navy cross with the citation: "For distinguished service in the line of his profession in connection with the design and construction of submarines and for work in the war zone."

In 1919 he served with the allied naval armistice commission, and in 1920 he was appointed assistant naval attache at the American embassy, London. Returning to the navy department in 1921 for duty in the bureau of construction and repair, he was shortly transferred to the

bureau of aeronautics where he qualified as a naval aviation observer. He was appointed a member of the army and navy helium board in April, 1923 and in November of that year he was made a member of the post graduate council, Naval Academy, Annapolis, Md.

On Aug. 16, 1926 he was appointed assistant chief of the bureau of aeronautics, navy department, and served in that capacity until Sept. 4, 1928, when he was granted leave for duty in connection with the Daniel Guggenheim fund for the promotion of aeronautics, where he was appointed vice president and treasurer. At this time he qualified for a pilot's license from the department of commerce.

In 1930 he joined the United States fleet as aide on the staff with additional duty as fleet constructor.



Rear Admiral E. S. Land
Chief Constructor United States Navy

In October, 1930 he was transferred to duty in the navy department.

Captain Land has the Spanish campaign badge. He was awarded the decoration of honorary commander of the military order of the British empire in 1922. In 1929 he was given a special letter of commendation by the chairman of the national advisory committee for aeronautics. His home is at Glenwood Springs, Colorado and his Washington residence is at 2500 Massachusetts avenue, N. W.

The first steamer to travel direct from Chicago to a Dutch port arrived at Rotterdam, Holland, Aug. 29. The ship was the *Henneseed* and carried a cargo of linseed coke. This voyage is expected to mark the commencement of heavier direct traffic between these two points.

New Italian Liner Rex in Official Speed Trial

THE Italian steamship *Rex*, of 54,000 gross tons, the largest liner built since the war, completed successful sea trials on Sept. 6. She is scheduled to sail on her first voyage to New York on Sept. 27.

Reports indicate that the *Rex* averaged 28 knots over a 600-mile run and that she attained a maximum speed of 29 knots, said to be the fastest trial run made by any liner.

Officials of the Italian lines at New York stated that the *Rex* was not built with the idea of winning the blue ribbon from the *BREMEN* and *EUROPA*. The new liner has been built for the purpose of giving faster express service between New York and Italian ports. Col. M. Serrati, one of the three United States directors of the Italian lines, stated that the contract speed of the *Rex* and the *CONTE DI SAVOIA* is 27½ knots and that the plan is to operate these vessels at an average speed of a little over 26½ knots so that the crossing from New York to Gibraltar can be made in five days, to Nice by the morning of the seventh day, to Genoa the same day and to arrive at Naples on the morning of the eighth day. This will reduce the present best time now being made in this trade by two days. He believes that the two new vessels will greatly help to stimulate travel over the southern route.

The *REX* has a length of 879 feet 8 inches and a beam of 101 feet 8 inches. Accommodations are provided for 400 first, 250 second, 300 special, 400 intermediate and 900 third class passengers. Though somewhat smaller than the *REX* the *CONTE DI SAVOIA* which will enter service in November, is expected to develop the same speed.

Dr. Kempf Visits U. S.

At the invitation of Capt. E. F. Egbert, C.C. U.S.N. in charge of the experimental model basin at the United States navy yard, Washington, Dr. Guenther Kempf, director of the shipbuilding experimental institute in Hamburg, is visiting the United States for the special purpose of inspecting American methods of testing models and to learn something of the plan for a new experimental tank to be constructed in Washington.

In testing ship models in Germany, Dr. Kempf pointed out that the models are fashioned in paraffin and in varying lengths corresponding to the size of the ship. The model for the *BREMEN* for instance would be as long as 30 feet, whereas models for smaller passenger and freight ships would be about 20 feet. In testing the models conditions in the tank are made to resemble actual weather conditions the ship is likely to encounter.

Self-Unloader Electrical Equipment

Based on Practical Experience

By C. T. Pearce

SELF-UNLOADING ships are in use principally in Great Lakes traffic. This type of ship is utilized for transporting bulk material such as coal, limestone, etc., and, as the name implies, carries its own unloading machinery rather than depending upon dock facilities. This characteristic is advantageous as it permits delivery of bulk cargo quickly and cheaply at any water front point regardless of shore equipment.

The most common type makes use of two horizontal belt conveyors located in the hold underneath the cargo hoppers, symmetrically arranged on either side of the center line. These are known as the hold or tunnel conveyors and deliver at the forward end to a combining hopper from which the material is raised to another hopper located on deck by means of a bucket type elevator known as the incline or elevator conveyor. From this point, the material is deposited on shore by means of the boom conveyor belt which is pivoted on deck in such a manner as to be able to swing through a horizontal angle of at least 90 degrees on either side of the center line and 20 degrees above horizontal.

Flexibility Economy and Control

To obtain a proper flow of material to the hold conveyors, the cargo hoppers are built with a bottom approximating in cross section the shape of a flattened W. In the bottom of the hoppers and directly over the conveyor belt, there is a series of gates which are opened or closed from the tunnel by operators who engage the gate operating mechanism with a reciprocating type feeding motion which operates continuously and runs underneath all the hoppers.

There is another type of self-unloader which has found considerable favor within the last few years. This is a patented arrangement known as the Leathem D. Smith system, and replaces the hold conveyor belts with scrapers operating in individual tunnels. These scrapers drag the material through the tunnel and up an incline to the combining hopper, after which the procedure followed is the same as for the arrangement first described.

Because of its flexibility and economy, together with the possi-

bilities of remote control from one or more points and interlocking against improper operation, electric drive is very well adapted to the conveying machinery. The suitability of electric drive for this application is attested to by the fact that within recent years several existing vessels have been converted to self-unloaders with electric drive for the conveying machinery, reciprocating steam engine drive being retained for propulsion.

For completely new installations, of course, the use of electric propulsion offers great possibilities since, in addition to the advantages cited above, there are those incident to electric propulsion itself. Moreover, with electric drive, the propulsion plant can be used for supplying power to the conveying equipment, since the propulsion load will not be present when unloading. The greatest activity at the present time, however, appears to be in the conversion of the conveying plant to electric drive on existing installations. This article will be confined, therefore, to a description of electric drive, together with the necessary

THIS article may be said to supplement the one on the conversion of three large freighters to modern self unloading vessels, published in the April issue of *Marine Review*. From the nature of electrical power and its present high state of development, it has been found to be the most efficient and the most flexible drive for the many units necessary in a self unloading vessel. It is therefore important to approach the problem of the selection of various driving units and the main power plant on the basis of practical experience with this type of equipment.

Editor's Note.

generating plant and switching, for the conveying machinery only.

This is one of the few instances where alternating current equipment is preferable to direct current equipment, even though power for operation is generated on board and can be made anything desired. Alternating current machinery is, of course, not nearly so flexible as direct current machinery, but is simpler, cheaper, and easier to maintain and is perfectly satisfactory for this application since constant speed drive can be utilized throughout. Although wound rotor motors are used in some instances, this is solely for starting purposes and there is no necessity for continued operation at reduced speed with consequent secondary resistance losses. Of course, in a completely electrified installation utilizing direct current for propulsion, the conveying equipment would also be made direct current, in order, to utilize the propulsion plant for supplying the conveying motors.

Since the electric conveying equipment will stand idle while the ship is enroute, there is danger of the insulation collecting moisture from the surrounding air. The insulation should, therefore, be given special treatments to fit it for marine service and all small fittings and hardware should be given a corrosion-resisting finish. For wound rotor type motors, equipped with slip rings, the brushholder should be of brass or some noncorrosive material. Following is a more detailed description of the various pieces of equipment.

Conveyor Motors and Control

The hold conveyors are practically always driven by constant speed squirrel cage motors of the "line start" type to give high starting torque in conjunction with low starting current. They are of the sleeve bearing type with straight shaft extension for flexibly coupling to speed reducer or gear. Since this belt lies entirely in horizontal plane, no brakes are required. Control for these motors should consist of a push-button operated reduced voltage magnetic starter with definite time limit acceleration.

Combination of high starting torque and low starting current in conjunction with definite time limit reduced voltage starting insures

(Continued on page 28)

The author, C. T. Pearce, is a marine engineer with Westinghouse Electric & Mfg. Co.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

THE fact that a barge sank at her berth raised a presumption of unseaworthiness which she had to rebut to escape liability for damage to her own cargo, it was held in the case of *BUFFALO*, 56 F. (2d) 738. To hold said barge liable for damage to a barge moored alongside and to the latter's cargo, it must appear that she negligently collided with the other barge. The burden is on the said barge to show that she did not come into damaging contact with the other barge through her negligence.

* * *

A TUG and her owner, while required to exercise good seamanship, are not liable for mere errors of judgment in difficult situations, and are not required to "do precisely what, after the event, others may think would have been best."—*STIRLING TOMKINS*, 56 F. (2d) 740.

* * *

IN salvage cases, the highest compensation ordinarily allowed in the most meritorious cases is one moiety, which is rarely given except in the case of a derelict. The primary consideration is the amount of benefit conferred. In the case of *WAHLEENA*, 56 F. (2d) 836, owner and crews of tugs, worth about \$80,000, were held entitled to an award of \$5000, with interest at six per cent, from date of decree, for saving a stranded schooner and her cargo of salvaged value of \$16,851.

* * *

THE question presented in the case of *HUSTLER*, 56 F. (2d) 1039, was whether the cargo owner could hold the vessel for any part of the expenses incurred by it in removing and dumping damaged cargo. It was held after the sound cargo had been removed, the cargo owner was under no obligation to do anything in respect to the damaged cargo, inasmuch as any water damage was fatal to the cargo and made it a total loss; hence, the cargo owner was not entitled to recompense for expense of removing and dumping said damaged cargo.

* * *

WITH respect to damage to cargo, detention of a vessel 27 hours due to the master's intoxication constituted a deviation by the carrier, and a provision of the charter party absolving the carrier from liability for deterioration of cargo was inap-

plicable. As to the effect of a voluntary deviation from the contract of carriage, whether private or common, the liability of the shipowner is that of an insurer. This liability, once incurred, can be avoided by the shipowner only by an affirmative showing that the loss must have occurred, even without the deviation.—*HERMOSA*, 57 F. (2d) 20.

* * *

ONE who furnishes towage service with knowledge that he is dealing with the charterer is charged with notice of whatever the charter contains. Where, under the charter party, the owner parted with possession and control of vessels and the charterer was a person to whom their management was intrusted, the charterer became the owner pro hac vice, and he is presumed to have had authority to procure towage.—*J. W. HENESSY*, 57 F. (2d) 77.

* * *

SUPPLIES furnished by holders of an option to purchase a charterer's fish and lobster catch to camps established on shore by the charterer were held in the case of *ASTORIAN*, 57 F. (2d) 85, not "necessaries" furnished the ship, and hence a maritime lien therefor did not arise.

* * *

WHERE, under terms of a pilotage clause, when the master of a tug navigated a steam vessel under her own propelling power, he became a servant of the owner of the vessel with respect to giving orders to any of the tugs engaged in the towage service and with respect to handling the vessel, the tugs were thereupon released from faults or acts of negligence of the master of the tug.—*MARGARET A. MORAN*, 57 F. (2d) 143.

* * *

A TUG, with barge in tow, proceeding out of a slip and straight across Gowanus bay, New York, had the duty of keeping out of the way of an approaching vessel, and where she continued on without change of course, with her engines working full ahead, and gathered headway until collision occurred, she was liable for the collision.—*HARRY*, 57 F. (2d) 184.

* * *

DISBURSEMENTS, voluntarily made, by a shipowner, for the maintenance and return of a disabled seaman from a foreign port were held,

in the case of *American South African line v. United States*, 57 F. (2d) 208, not recoverable from the government.

* * *

WHERE the charter party of a steamship contained the term, "ready to receive or discharge cargo," the shipowner can recover demurrage from the time the vessel arrived in the loading port, not at the loading berth; and such owner was bound by the master's admission as to lay time at the port of loading.—*BELLOTA*, 57 F. (2d) 264.

* * *

A CONTRACT executed in Spain by consignees and cargo owners for general average contribution was construable in the light of the Spanish code, and obligation under the Spanish law to refund consignees' and owners' overpayment of general average was payable in pesetas. The rate of exchange when the libel was filed governed.—*Royal Insurance Co. v. Transatlantica Espanola*, 57 F. (2d) 288.

* * *

THE act of an assistant engineer, not on duty, in putting out lights of the steamship was not within the scope of his employment, it was declared in the case of *Sibley v. Barber steamship lines*, 57 F. (2d) 318; hence, the master was not liable to one who was given permission to sleep on the steamship and who fell into an open hatch after the lights were put out.

* * *

THE crew has a maritime lien for their wages, and those who advance money to the master to pay the crew's wages are entitled to a maritime lien of the same rank. If advances of a ship's agent be guaranteed by the owner, the agent will be held to make the advances on the credit of the owner and not of the ship, and, by statute, there is a presumption that advances for seamen's wages are made on the credit of the ship.—*ENGLEWOOD*, 57 F. (2d) 319.

* * *

A VESSEL descending a stream in a fog and discovering a vessel ascending the stream has not the right to initiate passing signals, but her plain duty under the circumstances is to blow the danger signal, stop, and reverse her engines until such time as passing signals can be agreed upon.—*SILVANUS*, 56 F. (2d) 257.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	287	1,754,583	270	1,636,803
July	238	1,483,476	254	1,553,215
June	267	1,579,970	277	1,650,915
May	277	1,484,116	259	1,392,451
April	270	1,506,696	277	1,515,147
March	332	1,982,670	375	2,070,546
February	312	1,875,981	322	1,776,394
January	297	1,821,335	305	1,719,978
December	314	1,692,258	343	1,744,190
November, 1931	304	1,564,284	308	1,542,849

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)				
(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	64	175,530	43	113,901
July	49	130,439	38	85,956
June	55	157,399	36	102,354
May	66	205,184	46	142,889
April	55	165,646	51	159,427
March	57	186,479	45	151,190
February	49	150,899	34	98,667
January	51	168,266	36	114,982
December	58	180,172	42	132,734
November, 1931	52	148,335	37	111,969

Boston

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	117	369,799	103	339,775
July	121	408,896	101	346,926
June	116	342,057	95	322,558
May	125	294,093	97	257,608
April	103	308,951	72	215,237
March	99	319,863	65	217,992
February	107	315,036	63	213,166
January	94	286,508	61	208,491
December	102	313,977	65	240,908
November, 1931	75	241,142	52	166,786

Portland, Me.

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	14	25,844	14	24,208
July	9	15,156	10	17,733
June	10	25,895	11	26,519
May	14	26,484	14	29,669
April	10	22,911	10	24,483
March	14	41,083	13	35,993
February	20	53,793	20	56,558
January	13	28,179	14	28,955
December	18	38,860	18	37,319
November, 1931	17	40,991	19	47,514

Providence

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	5	13,418	1	5,071
July	2	5,918	2	9,634
June	7	22,359	3	7,151
May	7	24,204
April	4	17,438	3	13,515
March	8	35,293	5	24,289
February	5	19,442	4	18,533
January	8	41,147	4	21,654
December	11	41,268	4	17,037
November, 1931	9	35,826	5	18,040

Portland, Oreg.

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	22	93,256	32	127,572
July	21	84,961	24	99,035
June	20	80,272	25	98,356
May	20	82,750	25	99,862
April	23	83,171	28	104,796
March	26	103,924	36	142,050
February	32	127,810	36	149,417
January	27	112,542	42	168,762
December	29	114,184	40	154,060
November, 1931	26	103,835	47	182,585

Baltimore

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	88	243,077	87	245,091
July	88	255,354	86	255,209
June	95	299,502	97	294,264
May	95	289,042	102	317,751
April	108	346,276	114	377,317
March	96	288,052	105	319,511
February	105	337,487	98	323,603
January	95	301,958	102	328,876
December	102	330,709	106	354,320
November, 1931	99	304,138	98	314,109

Norfolk and Newport News

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	25	53,025	37	86,952
July	23	72,755	36	91,332
June	18	51,803	48	114,222
May	24	52,049	43	112,672
April	22	59,932	33	77,515
March	33	79,948	42	99,939
February	22	68,136	48	121,647
January	17	53,536	38	104,392
December	30	95,762	38	110,614
November, 1931	23	77,075	47	113,416

Jacksonville

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	8	14,142	9	16,647
July	8	20,558	7	16,963
June	7	12,746	10	20,277
May	12	33,157	8	20,489
April	9	17,886	9	21,812
March	8	15,560	13	26,457
February	8	18,785	10	21,812
January	8	26,601	12	27,759
December	12	25,453	10	21,501
November, 1931	6	14,295	8	22,180

Key West

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1932	38	62,503	40	62,486
June	37	61,115	39	76,274
May	56	76,236	55	76,070
April	55	77,443	50	80,778
March	41	61,078	39	59,069
February	39	59,334	39	66,392
January	43	67,913	42	71,873
December	39	68,392	40	73,365
November	40	53,752	42	53,497
October, 1931	37	57,588	37	59,408

Mobile

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1932	107	222,810	99	203,444
June	91	207,178	93	201,443
May	102	212,215	97	198,871
April	102	192,617	104	202,965
March	97	204,645	98	211,921
February	101	235,846	96	219,215
January	110	253,792	112	242,378
December	98	226,656	85	214,395
November	100	214,204	87	189,474
October, 1931	118	251,661	112	253,721

Seattle

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	39	183,141	36	167,807
July	32	145,560	36	162,923
June	36	160,585	32	143,574
May	43	184,393	41	170,652
April	40	171,346	43	191,352
March	43	190,082	43	180,862
February	50	217,837	54	232,138
January	48	200,281	50	216,819
December	50	218,018	48	204,111
November, 1931	48	209,655	50	215,614

New Orleans

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	160	448,826	156	442,655
July	166	438,496	171	448,198
June	170	597,552	164	457,960
May	182	517,523	169	472,154
April	192	558,631	194	559,824
March	200	604,269	196	589,805
February	157	436,882	169	469,296
January	171	516,707	171	506,411
December	169	482,802	170	504,981
November, 1931	173	498,800	169	483,099

Charleston

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	15	29,293	18	46,756
July	17	39,628	14	39,844
June	26	80,438	25	78,864
May	29	80,415	27	71,288
April	21	53,404	21	57,341
March	37	131,723	36	110,353
February	32	88,616	27	75,262
January	24	73,488	22	16,217
December	37	108,083	35	96,490
November, 1931	19	31,125	11	35,588

Galveston

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1932	27	50,302	79	220,489
June	28	47,046	81	226,542
May	38	84,468	86	259,026
April	44	97,609	106	297,282
March	32	61,079	109	319,013
February	27	64,866	101	317,095
January	26	73,215	92	292,274
December	37	113,327	111	358,950
November	33	81,906	101	328,883
October, 1931	35	80,748	112	354,607

Los Angeles

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
August, 1932	253	653,836	244	635,164
July	226	646,417	230	617,947
June	168	588,184	162	558,945
May	229	691,109	164	650,539
April	189	617,325	222	635,301
March	168	622,067	188	611,770
February	164	627,876	158	622,730
January	144	578,699	149	594,384
December	153	517,165	136	506,985
November, 1931	147	503,238	142	535,870

San Francisco

(Exclusive of Domestic)				
Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
July, 1932	148	687,695	142	655,436
June	133	588,465	132	590,158
May	154	669,735	152	649,509
April	146	663,647	144	613,085
March	139	645,331	162	709,778
February	149	638,222	144	583,030
January	145	635,218	147	646,987

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

THE HAYTI, second of two combination passenger and cargo liners building by the Newport News Shipbuilding & Dry Dock Co. Newport News, Va., for the Colombian Steamship Co., New York, was launched shortly before noon on Sept. 17. Her sister ship, the COLOMBIA, was launched on Aug. 6. The sponsor of the HAYTI was Miss Margaret Stone Hardwick, daughter of Mr. and Mrs. Huntington D. Hardwick of Boston and granddaughter of the late Galen L. Stone.

Both the COLOMBIA and HAYTI are especially designed for cruising in tropical waters. Theodore E. Ferris, well known naval architect, New York, is the designer and Philip Kiesecker is responsible for interior decoration.

These vessels are to have a speed of 18 knots and will provide the fastest regular service in the New York-Hayti-Jamaica-Colombia run. The COLOMBIA is scheduled to sail on her maiden voyage from New York about Nov. 15, and will be followed by the HAYTI about Dec. 15. The run to Port au Prince will be made in 3½ days, to Kingston in 4½ days and to Puerto Colombia, in 5½ days. Cristobal will be reached eight days out of New York.

Accommodations are provided for 133 first class and 24 tourist class passengers, all in outside staterooms. The vessels have a displacement of 9490 tons, a length of 404 feet, 3 inches and a beam of 57½ feet. The machinery is geared turbines driving a single screw. Four oil burning Babcock & Wilcox watertube boilers will supply steam at 400 pounds per square inch pressure with 230 degrees superheat.

Launch Third Grace Liner

The SANTA LUCIA, third of the four vessels building for the Grace line at the Federal Shipbuilding & Dry Dock Co., Kearny, N. J., is to be launched Oct. 3. The sponsor will be Miss Hilda Holloway, daughter of William Grace Holloway, vice president of W. R. Grace & Co.

The first of these four new \$5,000,000 Grace liners, the SANTA ROSA, was launched March 24 and will make her maiden voyage from New York Nov. 26, and from San Francisco, Dec. 26. The second vessel, the SANTA PAULA, was launched June 11. The fourth liner, the SANTA ELENA, is still to be launched. All of these vessels will be in service by April next year.

When all four vessels are in service, weekly sailings will be maintained and the present service of the Panama Mail will be extended to include Seattle and Victoria, B. C. The new itinerary will cover New York, Philadelphia, Havana, Colombia, Panama, Costa Rica, El Salvador, Guatemala, Mexico, California, Seattle, and Victoria, B. C.

In addition to their luxurious passenger accommodations, these ships provide the most modern equipment for carrying and handling freight. They are equipped to take care of 7200 cubic tons of cargo—1000 cubic tons of refrigerated cargo; 1500 cubic tons of semiperishable cargo in chambers equipped with blower system and insulated between decks; and 850 tons of bulk cargo such as linseed oil in eight specially built tanks.

These four sister ships are being built from the designs and under the supervision of Gibbs & Cox Inc., New York. They are 508 feet long; 72 feet in beam; 39 feet in depth; 10,500 gross tons; 17,000 tons displacement and will be capable of developing a speed of 20 knots.

Launch Coast Guard Cutter

The coast guard cutter ESCANABA, building for service on Lake Michigan, was successfully launched at the yard of the Defoe Boat & Motor Works, Bay City, Mich. at 4:00 p.m., Sept. 17.

The Defoe Boat & Motor Works was awarded the contract for building this vessel last October on its low bid of \$408,800. The original contract calls for completion of this vessel by Oct. 3. The principal particulars of the ESCANABA are: Length overall, 165 feet; beam molded, 36 feet; depth molded to upper deck, at side amidships, 21 feet; draft maximum, 13 feet; displacement, at about 12 feet mean draft, 960 tons.

The propelling machinery is a geared turbine driving a single propeller. The shaft horsepower is about 1500.

This vessel has been expressly designed for ice breaking and has the cutaway forefoot of the conventional ice breaking bow. There is a heavily reinforced cast steel stem, an ice belt of ¾-inch thick plate extends for the full length of the ship on each side, suitably widened forward to provide for change in trim.

Under deck living spaces have been divided into crew space forward and

officers quarters aft. The complement will consist of five officers and 46 men.

A more complete preliminary description of the ESCANABA, then known as Cutter No. 55 appears on page 61 of the November, 1931, MARINE REVIEW. A complete illustrated article of the completed vessel is planned for a later issue.

Third Freighter Trials

The BLACK FALCON, third of six vessels undergoing reconditioning for the Black Diamond Steamship Corp. for the New York-Rotterdam-Antwerp service attained a maximum speed of 14.66 knots on her official standardization trials off Rockland, Me., Sept. 3.

The work of reconditioning is being done by the Federal Shipbuilding & Dry Dock Co., Kearny, N. J. During her official trials the BLACK FALCON was loaded to maximum draft and displacement and after the trials she proceeded on her first voyage to Rotterdam. The results demonstrated that this vessel and her five sister ships will be able to insure delivery of cargo from New York to Antwerp and Rotterdam in ten days. In a preliminary trial off Fire island, running light, the BLACK FALCON attained a speed of 15.43 knots.

The remarkable increase in speed of something like four knots in these vessels is due to the changes initiated by M. J. Hanlon, operating manager of the Black Diamond Steamship Corp. These changes included the streamlining of the after portions of the hull and relocation of the rudder, rudderpost and propeller, installation of a new condenser, thorough reconditioning of the turbines and the use of preheated air in the boilers. The propulsion machinery was not altered or increased in capacity except as noted, to accomplish this satisfactory result.

Launch New Fire Tug

A new fire tug for Quebec city harbor to be known as the DURANLEAU, was launched on Sept. 3, from the Davie Shipbuilding yard at Lauzon, Que. The new vessel is 120 feet long, has a beam of 30 feet, a molded depth of 14 feet, 6 inches. Her engines are capable of developing 1200 indicated horsepower. Equipped with monitors, a wide range is possible for the heavy streams of water thrown from her.

Furness Liner Is Launched

Word has been received from the Furness Bermuda line, New York, of the launching of the line's new \$8,000,000 turbine electric liner *QUEEN OF BERMUDA* on Sept. 1 at the yards of Vickers Armstrong Ltd., Barrow-in-Furness, England. The sponsor was Lady Cubitt, wife of Lieut. General Sir Thomas Cubitt, K. C. B. governor of Bermuda. The *QUEEN OF BERMUDA* will be completed early next February and is scheduled to sail Feb. 25, on her maiden voyage for Bermuda.

Although a sister ship of the *MONARCH OF BERMUDA*, which has the distinction of being the biggest and fastest liner ever built for the regular New York-Bermuda passenger trade, the *QUEEN OF BERMUDA* will be slightly larger and will have several new features developed by British designers and shipbuilders. Every first class and every second class stateroom will have a private bath. There are two swimming pools, two night clubs, a cocktail bar near the dining saloon, a dance floor and sports deck that will rank among the largest afloat. She will also have a ship-to-shore telephone service.

The construction of the new *QUEEN OF BERMUDA* has set a shipbuilding record for passenger liners of her size, as the vessel's keel was laid on Dec. 19, last, only a little more than eight months to the time of launching. If she enters service as scheduled on Feb. 25, the entire period of her construction will have been only 14 months.

The principal dimensions of the new vessel are: Length, 580 feet; beam, 77 feet; gross tonnage, 24,000; displacement, 28,000. Powerful turbine electric machinery will develop enough horsepower to enable her to maintain an average speed of 20 knots. Accommodations will be provided for 830 first class and 30 second class passengers. With the entry of the *QUEEN OF BERMUDA* into service, the Furness interests will have one of the outstanding services in the world. With the *MONARCH OF BERMUDA*, accommodations will be provided for a total of 3440 passengers a week, or 1720 passengers in both directions.

As Consulting Engineer

Joseph Hecking has established an office at 119 South Fourth street, Philadelphia, as general consulting engineer and for patent development and testing machinery and materials. He expects to use his special knowledge of diesel engines to expand their utilization, wherever suitable.

Mr. Hecking graduated from a German gymnasium and completed his engineering training by an apprenticeship in the largest German steel plant. From 1901 to 1918 he served as leading engine draftsman with Cramps, New York Shipbuilding Co., Melville

and McAlpine and the United States navy department.

From 1918 to 1926 he was engaged as engineer surveyor with the American Bureau of Shipping, and from 1926 to 1930 as sales engineer with the Bethlehem Steel Co. and the Worthington Pump & Machinery Corp. Until recently he served in the engineering department of Bethlehem Shipbuilding Corp., Quincy, Mass.

Vessel Explosion Causes Great Loss of Life

The wooden steamboat *OBSERVATION*, said to be 44 years old and used for ferrying workmen across the East river off One Hundred and Thirty-fourth street, New York to Rikers island, was blown to pieces a few moments after leaving her pier on the morning of Sept. 9. The estimated total number on board was 125. The latest reports concerning the disaster indicate that at least 72 lives were lost, and many others injured.

Investigations were started almost immediately by state and federal authorities. Federal investigation was initiated under the direct supervision of Dickerson N. Hoover, assistant head of the bureau of navigation and steamboat inspection, Washington, D. C.

The cause of the accident had not been established at the time of this report. It is assumed that the disaster was due to a boiler explosion. The vessel was literally blown to pieces and the wreckage sank. Operations have been under way to recover parts of the wreckage and particularly the boiler. It has been reported that the safety valve has been recovered, but that an examination at the time did not give any definite clue to the cause of the explosion. Reports indicated that the boilers were installed in 1906 and that they were inspected last April by officers of the steamboat inspection service and were found to be in good operating condition.

This is the second greatest marine disaster in the waters of New York harbor and a most thorough investigation will be carried out to establish its cause and to place the responsibility, if it is found that it was due to negligence.

Todd Shipbuilding & Dry Dock Co. Mobile, Ala. has been awarded contract for the repairs to Lightship 81 at \$3582 and for repairs to the tender *COSMOS* at \$1238, both projects being for the United States lighthouse bureau, New Orleans.

R. Stanley Dollar on his recent return to New York on the *LEVIATHAN* expressed optimism for the future of the American merchant marine and the necessity of undertaking the building of a third sister ship to the *MANHATTAN*.

Shipyard Site Purchased

W. S. Newell, president of the Bath Iron Works Corp., recently announced that the shipyard at Bath, Me., which has been leased for the past five years has now been purchased from the New England Public Service Co. and the Keyes Fibre Co. by the Bath corporation.

Long famous as a shipbuilding plant, this yard was reorganized late in 1927 after a period of shutdown. Since reopening it has turned out nearly a score of private yachts, a half dozen or more trawlers, seven 165-foot patrol boats for the United States coast guard and will soon start construction work on a new 1500-ton United States navy destroyer *DEWEY*. It is one of the oldest shipbuilding properties in the United States. Wooden ships were constructed on its site during the past century and the nucleus of the present plant was begun shortly after the Civil war.

Here were built such famous ships as the gunboats *MACHIAS* and *CASTINE*, constructed in 1891, the *VICKSBURG* and *NEWPORT* in 1896, the battleship *GEORGIA* in 1904, the *WADSWORTH* in 1915 and *PRUITT* in 1920.

Sometime after the war the plant was sold at public auction and one of the unsuccessful bidders of the properties was W. S. Newell. Two years after the plant had been practically junked, he organized the Bath Iron Works Corp., leased the property and started construction work again. The officers of the corporation are W. S. Newell, president; A. M. Main, general manager; and L. E. Thebeau, treasurer.

Discuss Fire Protection

Recognizing the importance of this problem the committee on programs of the Society of Terminal Engineers, 114 Liberty street, New York city, has arranged for the presentation of a paper covering this subject by Charles H. Fischer, chairman of the committee on piers and wharfs of the National Fire Protection association. Mr. Fischer will present his paper at the Engineering Societies building, 29 West 39th street, New York city at 8 p.m., Oct. 4. The paper will cover the limitations and limited value of building code regulations when applied to marine structures; inherent structures and fire protection weaknesses in piers and wharfs; the fire record of piers and wharfs, illustrated with lantern slides; why fire losses on this class of property are high and may be expected to continue so; a brief review of the development of the recommended good practice requirements for the construction and protection of piers and wharfs, of the national board of fire underwriters and a number of other features in the construction and protection against fires.

Everyone interested in the subject of fires is invited to attend.

Self Unloader Equipment

(Continued from page 23)

that the tunnel conveyors will be started, even under conditions of excessive torque requirements, and further, that this will be done without excessive shock either to the conveying machinery or the electrical system. This follows from the fact that the starting torque is applied in two steps. In the great majority of instances, the motor will come up to speed before transferring to full voltage and will, therefore, never draw a line current corresponding to full voltage starting.

The incline conveyor is usually driven by a wound rotor motor with sleeve bearings and straight shaft extension for flexibly coupling to the speed reducer. A floor mounted partial torque magnetic brake should be provided with the necessary front shaft extension on the motor. Control for this motor should consist of a pushbutton operated magnetic starter giving several points of definite time limit acceleration by means of secondary resistance.

Use of definite time limit acceleration provides that the motor torque will be gradually increased until sufficient to break loose the load. The advantages of this characteristic were described in the case of the hold conveyors.

The boom conveyor is also driven by a wound rotor motor equipped with ball bearings around the shaft for inclined operation. The reason for the latter requirement is because the motor is mounted on the boom. In most instances, in order to keep the overall length of motor and gear as low as possible, this motor is arranged for geared drive with the pinion mounted directly on the motor shaft, which sometimes necessitates the use of a third bearing. As in the case of the incline conveyor motor, a floor mounted partial torque brake is required. Control should be similar to that required for the incline conveyor motor.

Interlocking Arrangement Provided

It is usual practice to interlock the controls of all conveyor motors so as to preclude starting of the hold conveyor belts until the incline conveyor is in operation and starting of the incline conveyor until the boom conveyor is in operation. Also, in case any of the motor controls open up, due to overload, intentional stopping of the motor, or any other cause, all preceding motion will be stopped. This feature provides against the material being piled up on a conveyor which is not in motion. It is obtained by completing the control starting circuits of each motor through an auxiliary contact on the last accelerating contactor of the motor driving the succeeding motion.

In most cases, each control is pro-

vided with one or more "stop" buttons in addition to the usual low voltage protection type "start"—"stop" pushbutton. This permits instant opening up of a control and stopping of the motor from an additional point. In addition to this, a mechanically operated spring return switch is ordinarily placed in the control circuit of each hold conveyor motor. It is actuated by means of a line running the entire length of the conveyor, and permits the operator to shut down the hold conveyors from any point, in case they become jammed by a large stone or other obstruction.

Such complete interlocking against improper operation as described above is practical only with electric drive, and is one of the important arguments in its favor.

Power from Turbine Generator

Power for operation of the above motors is usually supplied from a standard 3600 revolutions per minute alternating current turbine generating set with direct connected exciter and arranged for operation with an automatic voltage regulator. In laying out an alternating current system, such as this, one thing which must be kept continually in mind is that the voltage dip occasioned by the starting of any motor must not be sufficient to cause the other motors on the line to fall out of step, due to lowering of torque or opening up of control contractors. Obviously the design of the power plant and its voltage regulating equipment is very closely tied in with the starting characteristics of the various motors and vice versa.

By using "line start" motors with reduced voltage starters for the smaller ratings and wound rotor motors for the larger ones, starting shocks are considerably lessened. Practically every case calls for special consideration and should be referred to a competent consulting engineer or one of the electrical manufacturing companies familiar with this problem.

Switching equipment should consist of a main generator panel mounting circuit breaker, rheostats, meters and automatic voltage regulator, and a feeder panel mounting breakers or fused switches for the various motor circuits.

Admiral Colvocoresses Dies

An unusual career came to an end in the death on Sept. 10, at Litchfield, Conn. of Rear Admiral George Partridge Colvocoresses, U.S.N. retired, veteran of the Civil war and the Spanish-American war. He was 85 years old and had been in retirement since 1907, after having served the navy for 45 years in all parts of the world.

No tale of fiction could well be more romantic than the story of his origin.

He was born in Litchfield, Conn. on April 3, 1847, the son of a Greek immigrant who also served the American navy with distinction. The admiral's father at the age of six, having been saved by the payment of ransom during the Turkish massacre of Christians in 1822, was entrusted to the guardianship of Capt. Alden Partridge, U.S.N. who brought the boy to America and educated him at the military academy at Norwich, Vt. On growing to manhood he entered the American navy. He served in the Mediterranean, with Wilke's Antarctic expedition, in the storming of the barrier forts at Canton in 1856 and in the Civil war. He married Eliza Freelon Halsey and the son was given the middle name Partridge in honor of the father's boyhood benefactor.

At the age of 14 the younger Colvocoresses joined his father aboard the store ship SUPPLY and took an active part in the navy's activities during the Civil war. After the war he entered the Naval Academy and was graduated in the class of 1869. At the battle of Manila bay he served on board the CONCORD in Dewey's fleet. He was advanced five numbers for eminent and conspicuous conduct at the battle of Manila bay. In 1900 he was promoted to the rank of commander and in 1905 to captain and retired as a rear admiral in 1907. His last tour of duty was as commandant of midshipmen.

Leviathan Stays in Service

Announcement has been made by the United States Lines that the LEVIATHAN will remain in commission throughout the winter months, sailing from New York Oct. 18, Nov. 15, Dec. 15 and regularly thereafter. As heretofore the LEVIATHAN will call at English channel ports and Bremen, continuing the policy inaugurated by the new owner of sending this great American flag steamer through to a German port.

Fine support given the LEVIATHAN by travelers, generally, since the re-entered service in April under the present management after extensive reconditioning and redecoration, is a clear indication of the popularity of this great ship. World-wide interest in American flag ships has been augmented this year, first by the re-entrance into service of the LEVIATHAN and then by the advent of the MANHATTAN, the largest American built transatlantic liner and the fastest cabin ship in the world, as well as the recent launching of the sister ship, the WASHINGTON.

Public interest directed upon these liners has resulted in considerable increase in passenger and freight carryings of the LEVIATHAN and in heavy passenger lists for the two sailings of the MANHATTAN, both from America and Europe, and promises equally well for future sailings.

Lifeboat Race Again Won By Norwegian Crew

For the third year the annual international lifeboat race, held under the auspices of the Neptune association, New York, on Labor day, was won by a crew of eight sailors from the Norwegian-American liner BERGENSFJORD. The William H. Todd lifeboat trophy donated by the late president of the Todd Shipyards Corp. thus becomes the permanent possession of the BERGENSFJORD. The course of the race, two miles in length, lay through the Narrows, New York harbor and the winning Norwegian crew covered this distance in 17 minutes and 27 seconds.

The popularity of this annual sporting event among crews of ships in New York harbor is increasing every year and it was estimated that at least 100,000 people lined the shores of Brooklyn and Staten Island to watch the race. Second to finish the race was the lifeboat from the GENERAL VON STEUBEN of the North German Lloyd. The Norwegian crew of the EQUATORE of the Brunneneas-Torgersen line was third. The eight other entries trailed the winning boats at distances up to one quarter of a mile.

Within the next few weeks the Todd trophy awarded to the first steamship company which wins three races will be presented to the winning vessel by John D. Reilly, president of the Todd Shipyards Corp. and chairman of the lifeboat race committee. Arrangements for the sixth international lifeboat race held on Labor day were made by Capt. John F. Milliken, secretary-treasurer of the Neptune association.

When to Dry Dock Vessels For Best Economy

Recognizing the gradual increase in power with a resulting increase in cost to drive a vessel caused by the accumulation of barnacles, grass and other sea growths, the National Council of American Shipbuilders recently completed a survey on this important subject. It was found that very little specific information was available as to the actual increase in power required as fouling increased and as to the effect of fouling upon cost of operation.

The National Council, however, was able to present information from actual results, which, in the typical example considered, would indicate that drydocking at periods slightly over five months would seem to give the most economical operation. The case considered was a privately operated oil burning ship over a five-year period. This vessel has an indicated horsepower of about 3200 and the fuel consumption per indicated horsepower per hour is 1.35 pounds. At a cost of

\$2800 per docking, if this vessel is docked at four-month intervals the cost would be \$42,000. Calculations show that the increased fuel cost over clean bottom would be \$23,400. At five-month intervals the docking cost would be \$33,600 and the increased fuel cost over a clean bottom would be \$29,100. For dockings at six-month intervals the cost would be \$28,000 and the estimated fuel cost over clean bottom would be \$35,700. The conclusion therefore is for this vessel, drydocking for periods for slightly over five months will give the most economical operation.

With its report the National Council presented a curve showing average percentage increase in initial power required to drive a vessel at constant speed in order to overcome the increased resistance due to the gradual fouling of the wetted surface. This curve is a composite of the results of 16 ships and shows that for 80 days out of drydock there is a 10 per cent increase in power required. For 154 days out of drydock a 20 per cent increase in power is required.

Capt. William Lyons Dies

Capt. William Lyons died on Aug. 27 at Yarmouth, N. S. He was born July 8, 1859 and until his retirement last year he was commodore captain of the American Hawaiian Steamship Co., having served that line and its predecessor for 44 years. He had served 60 years at sea, shipping on a Nova Scotia fishing boat when he was 13 years of age. He joined the company, which later was to become the American Hawaiian Steamship Co., in 1887 when all its vessels were sailing ships. He became captain of the ST. DAVID in 1898.

Captain Lyons had the honor of commanding the MISSOURIAN, first commercial cargo vessel to transit the Panama canal Aug. 16, 1914. He had the unusual experience of being in command of two vessels attacked and sunk during the war, the MISSOURIAN in April, 1917 by a submarine and the MONTANAN on Oct. 15, 1918 by a torpedo.

Chicago to Gulf Waterway to Carry Exhibits

Col. Robert I. Randolph, president of the Mississippi River association, announces that boats and barges from the Mississippi, Missouri, Ohio, Illinois and other rivers will bring exhibits to the Chicago Century of Progress exposition in 1933, which will mark also the completion of a minimum waterway of 9 feet in the Mississippi valley.

"It is significant that Chicago should celebrate in 1933, at once the hundredth anniversary of its incorporation as a city, with this exposition, and of its first harbor improvements and the realization of its ancient dream of a water outlet to the Gulf of Mexico," said Col. Randolph.

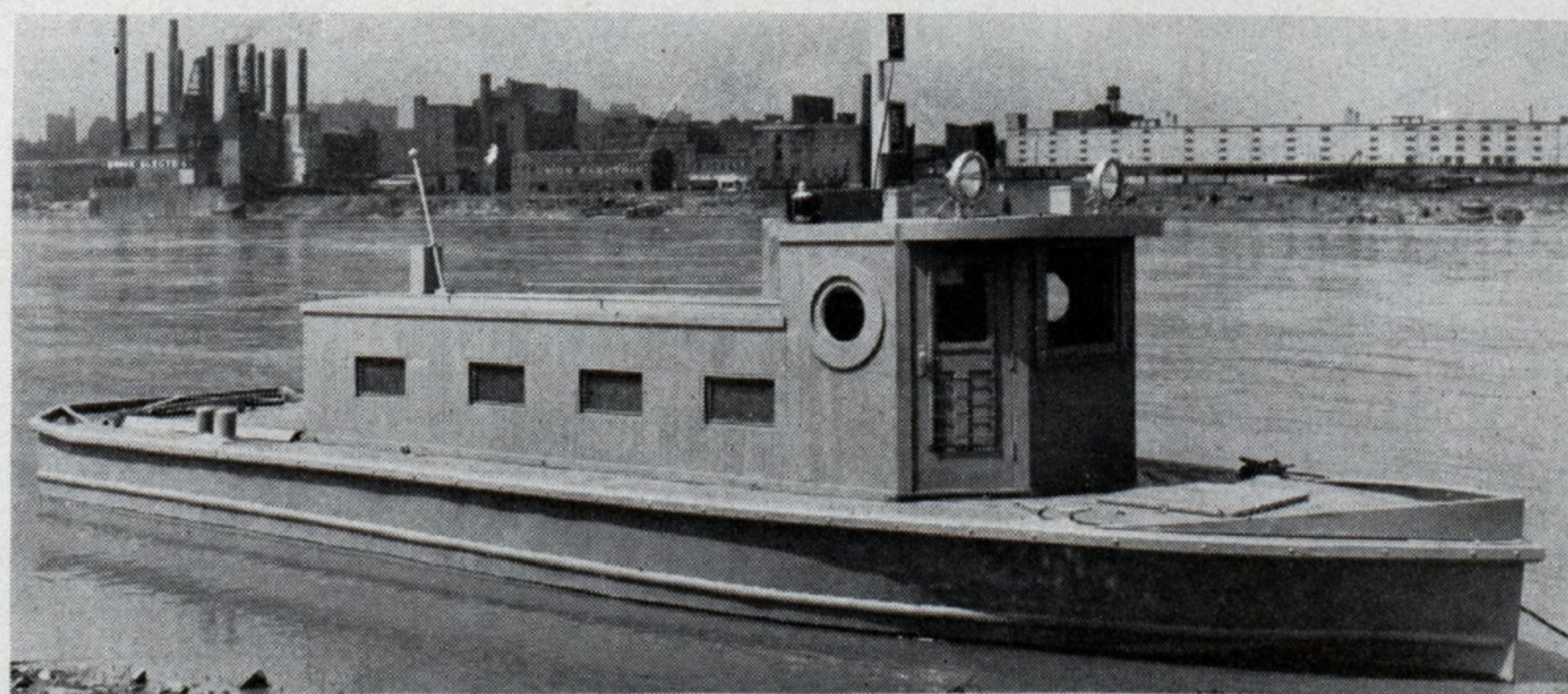
The Mississippi Valley association is planning to show an animated and illuminated relief map of the entire valley at the exposition. Side wheelers and stern wheelers which ply the currents of the Mississippi and tributaries are expected to be seen in the Chicago harbor for the first time during 1933.

Six All Welded Towboats for Service in Mexico

Six all welded diesel driven towboats were recently completed by the St. Louis Structural Steel Co. East St. Louis, Ill., for the Standard Fruit and Steamship Co. for service in Tobasco, Mexico.

Constructed of No. 10 United States gage plates, the hulls were welded throughout with 5/32 inch electrodes and welders manufactured by The Lincoln Electric Co. Cleveland. No difficulty was experienced in making the hull watertight. Welded construction was decided on due to the economies it offered, to the greater strength possible, and to the fact that it makes the boat less susceptible to leaks due to hard bumps.

These towboats are propelled by 60 horsepower diesel engines and attain a light speed of 10 miles per hour. They draw 14 inches of water.



One of Six All Welded Towboats for Mexican Service

Modern Stevedoring and Dock Management

Practical Ways to Cut Costs in Cargo Handling

Conducted by
H. E. STOCKER

Using Sideports for Cargo Handling Aids Economical Operation

By H. E. Stocker

WITH some lines the time between ports is such a large percentage of the total voyage time that it is not possible to balance port time sufficiently by provision of sideports to reduce the number of ships in service. It may be necessary to cut the voyage time one-third in order to eliminate one ship, but if this leaves too little time for handling of cargo at port, then this economy is not possible.

The number of voyages yearly can be increased provided the schedule can be worked out satisfactorily from the viewpoint of the traffic department. Saturday sailings may be considered essential in which event, there is no advantage from more frequent sailings.

Reducing Cargo Handling Costs

However, if the operating costs cannot be reduced by reducing the number of ships in service, the provision of sideports may be profitable because of the reduction of cargo handling costs. In some cases the claim is made that on a straight time operation there is no economy in providing sideports. In such cases however, there is a saving of overtime because with a greater number of cargo openings available a larger number of tons can be handled on straight time.

One line operating both sideport and hatch ships has found that when handling the same class of cargo, the sideport ship loads and discharges for 15 per cent less cost than the

hatch ship. The tons per man hour in the case of the sideport ship is 180, in the other type of ship 160-12 per cent better in the former case.

Applying these percentages, the one particular line could save \$20,000 a year. This saving would pay for the cutting of sideports in the ships within 18 months. Allowing for pier alterations necessary, the total cost of providing for sideport operation would be paid for in about two years. Normally, this is a reasonable period but the financial condition of a company is just as important in considering the profitableness of sideports as the reduction of operating and cargo handling costs. If the money is not available in one form or another for the construction of sideports, possible economies in time and money are of no value. In normal times the financial problem may be worked out on a payment out of savings basis, but this is difficult under present conditions.

It is also possible that money available for sideports may be expended for better "profit" advantage on some other improvement. Good management spends each dollar with the "net profit" advantage of the line in mind.

The Savannah line operating between the ports of New York, Savannah and Boston, turns a ship around in a very short time, and achievement possible only with the use of sideport equipped ships. In the case of the Savannah line, provision of passenger accommodations requires side-

ports because there is little space for overall hatches. But having sideports, the ship can be turned around in a few hours. A ship can load and discharge an average of 200 tons an hour, and average 2.5 tons per man hour. The northbound cargo is fairly heavy and the southbound consists of general cargo of every character.

Greater Use of Equipment

I know of no steamers handling satisfactorily the same class of cargo which loads and discharges overall, making such a good man-hour figure. Another line does slightly more than one ton per man-hour. Sideports would increase this to about 1.25 tons per man-hour.

The Savannah line achieves this result with the aid of 21 electric trucks and 110 skids. There are five electric lift trucks and 15 load carrying trucks and one crane truck. The management plans to increase the number of skids because of their value in reducing handling costs on cargo received. Trucks back up to a line of skids and unload to one or more skids as required by the tracks. Unloading to a skid platform rather than to the floor of the pier has effected large savings. This is another example of cutting costs by keeping the cargo off the floor of the terminal, a practice which can be extended to many other terminals throughout the country.

The crane truck has been found very useful. When I was on the Savannah line New York terminal

last week, it was unloading furnace parts from a motor truck and placing them on a load carrying electric truck. On another occasion the crane truck was lifting pieces of machinery from the pier floor and placing them on a load carrying truck for carrying into the ship. The load carrying trucks are used to particular advantage in discharging as they can peddle the mixed works around the pier quickly.

Cargo Movement Is Continuous

With a sideport ship the movement of the cargo from the pier to place of storage in the ship is continuous. With an overall ship the pier operation can be the same but a delay must necessarily occur at shipside where the ship's gear would be attached for hoisting the cargo overside.

A large part of the cargo going into the hold of the Savannah line ships is sent from the deck into the hold by chutes rather than by the use of a crane, ship's booms and winches or elevators, as is done with other sideport ships.

The Matson Navigation Co. operating between Pacific coast ports and the Hawaiian Islands has used sideports for years. Approximately 30 per cent of the general cargo handled is loaded and unloaded at San Francisco with the aid of sideports. Some of the Matson ships have 24 sideports, six on each side into the shelter deck and six on each side to the 'tweendeck. The full value of the sideports is utilized by handling cargo through the ports with electric trucks. Over 70 electric trucks operate on the San Francisco terminal of the line.

The Eastern Steamship Co. is another example of effective sideport operation. On one of the line's services a small gang can receive and load the freight received in a day because with sideports there is no need for winchmen, no men at shipside or in the hold to handle the tackle.

The Morgan line has found a large saving in overtime results from the use of sideports. This line uses a fleet of electric trucks and skids at New York and Galveston, while gasoline lift trucks and skids are used at New Orleans.

The MORRO CASTLE and ORIENTE of the Ward line are provided with sideports. Both hand trucks and conveyors are used in handling cargo through the ports.

Another company desiring to have the advantages of sideports at the minimum of expense, cut ports in one side of the ship only.

A good example of what can be done with sideports is the discharging of 2000 tons of sacked goods from a lake package ship in six and three-quarter hours through three sideports. If this work had been

done through five hatches the best that could have been done would have been 1500 tons in six and three-quarter hours. This ship utilized up to 260 men in discharging the cargo. Working hatches alone, less than half this number could have been utilized. However, if this line utilized modern cargo handling equipment on the terminal instead of hand trucks not only would the 2000 tons have been handled in less time but the costs per ton would have been decreased 15 to 20 per cent.

This operation would lend itself to the same sort of conveyor operation utilized so successfully by the Great Lakes Transit Corp. at Buffalo and Chicago which would effect even greater economies of time and money.

Sideports facilitate the use of conveyors. The twin screw type conveyor can be used only with sideports in handling cargo from the ship. The belt or slat conveyor can be better utilized than when it is necessary to run the conveyor over the rail and down a hatch.

Less Chance of Damage

Sideports are safer. The most dangerous part of an overall cargo handling operation is that of hoisting the cargo between ship and shore. With the provision of sideports, the handling of cargo from pier and ship and vice versa becomes the same character of operation as handling on the terminal. One prolific source of accidents, hatch covers, are reduced.

Sideports are not only safer for personnel but also for cargo. Damage occurs on terminals with narrow aprons because the slingload strikes against the side of the ship. In addition to the damage caused directly, the slingload is often loosened so that when it is landed some of the packages fall off and are damaged.

Swinging the slingload in the hold or on the terminal in order to land it on a particular spot is another cause of damaged cargo. This is avoided when the cargo is handled through sideports.

Damage to cargo by rain and snow is reduced because it is easy to rig a canvas covering or tunnel so that at no time is the cargo exposed.

Leaking of submerged ports is an objection offered to the use of sideports. This objection applies principally when ports are submerged after a ship is loaded. Neither the Matson Navigation Co. nor the Morgan line have had trouble from this source. Careless maintenance will cause many kinds of accidents, sideports or no sideports. One critic states that submerged ports do not square with our ideas of safety at sea. It is such objections made by men not responsible for company projects that have caused men in responsible positions to ask if we have not carried safety measures to an unreasonable extreme. The difficulty seems to be a poor balance be-

tween profit considerations and safety considerations.

Practical Use of Conveyors

The Clyde line uses conveyors for discharging fruits and vegetables through side ports during the five or six months of the season. Tractors and trailers were recently installed on one of the Clyde line piers for handling general cargo in and out of their side port ships with large economies.

There are a number of technical points involved in construction of ships with side ports and use of side ports which cannot be gone into in detail at this time. Size and location of ports; types of doors are important. In addition the height of coamings, type of deck and elevators, all have an effect on the profitable use of electric and gasoline trucks through sideports.

A study of one sideport ship developed that the ports were not placed as near the center of the cargo space as was practical and that the elevators were poorly located.

The elevators should be located away from bulkheads and there should be ample wing space so as to permit the tractor to circle with a train of trailers. It has been found that forward and aft elevators in the same hold should be close enough so as not to cause excessive handling on the tank top, as in that space tractors and trailers are seldom used and all cargo is man-handled.

Adequate Planning for Economies

The coamings were found to be too high and the elevator platforms too small and too slow. The elevator platforms were not flush with the deck, this caused difficulty in getting trailers on and off the elevators.

The chief purpose of this article is to contribute some facts, figures and to stimulate discussion of the subject of sideport economies. The greatest progress toward profitable ship operation will follow such discussion of sideports and as well as other operating problems.

Open Marine Terminal

The Anchor Storage Co. recently commenced operation as a marine terminal and storage organization at 219-229 East North Water street, Chicago. The property is conveniently located for handling cargo from lake vessels, barge canal motorships and, upon the completion of the Illinois waterway, from river barges. The property has a private siding of eight-car capacity on the Chicago & North Western railroad. Storage area includes 220 square feet and is equipped with cargo handling facilities. Officers include Sidney A. Smith, Harry F. Partridge, Hugh G. Tucker, Ray H. Lumpp, and William R. Kleinschmidt, all with the Currier Lee Warehouse Co.

Preparing Harbor for Trade Brings Rapid Growth

THE city of Long Beach, the fifth largest city in the state of California was incorporated Dec. 1, 1897, and at that time less than 500 people were its inhabitants. The present day population is 143,000. It seems hardly possible that a city could take on such strides in so short a time. The commercial justification for this great growth is found in a rare combination of unexcelled harbor facilities, transportation railroad termini, bringing to tidewater the main lines of two great systems, an exceptionally mild climate the year around and vast resources in timber, minerals and agricultural products of the Pacific Southwest as a water haul junction with the raw materials, not only of our own country, but from many parts of the world. These are a few of the things that is making Long Beach one of the important port cities of the country.

Not only the large increase in population has been noted, but in the value and tonnage also of shipping through the Long Beach harbor from 1925 to 1930. In 1925 the port handled 358,899 tons, valued at \$2,952,612, while in 1930 the tonnage was 4,039,071, with a valuation of \$69,565,984.

The records of the past years sets forth clearly the marvelous development that has occurred in the Long Beach harbor. In 1900 the port was little more than a salt marsh and river mouth. In 1914 it had attained no significance commercially, being a port of call for only four or five maritime companies at the outbreak

of the World war. During the past 10 years it has grown to such an extent that it now ranks well with other ports of the country.

The inner harbor terminal was completed and opened October 1930, providing dockage for three vessels of 32-foot draft adjacent to 42,000 square feet of covered storage. In dockage alone a total of \$3,036,000 has been invested, which has provided a total of 7612 feet of frontage available for berthing ships during cargo movement. During the last fiscal year, over these docks, a total of more than four million tons of freight was handled. Fifteen to twenty-five ships can be accommodated here simultaneously by existing docks. While these figures are impressive in view of the youth of the port, it is still more interesting to note the possibilities. When the Long Beach harbor is fully developed there will be twenty-six miles of berthage, capable of receiving 400 vessels of average size at one time.

The port of Long Beach is contributing in a large measure to advance the welfare not only of the city itself, but offers unlimited possibilities to the smaller towns in the communities near by, who can use the facilities of the port to advantage.

At no time since the initiation of the Long Beach harbor, has the outlook for the future expansion been more promising or encouraging than at the present time. With the development of the port going forward continually and with the assurance of the substantial backing of those

interested in the harbor, it is only the beginning of what we must expect from this development in the very near future.

Pier Fire Protection

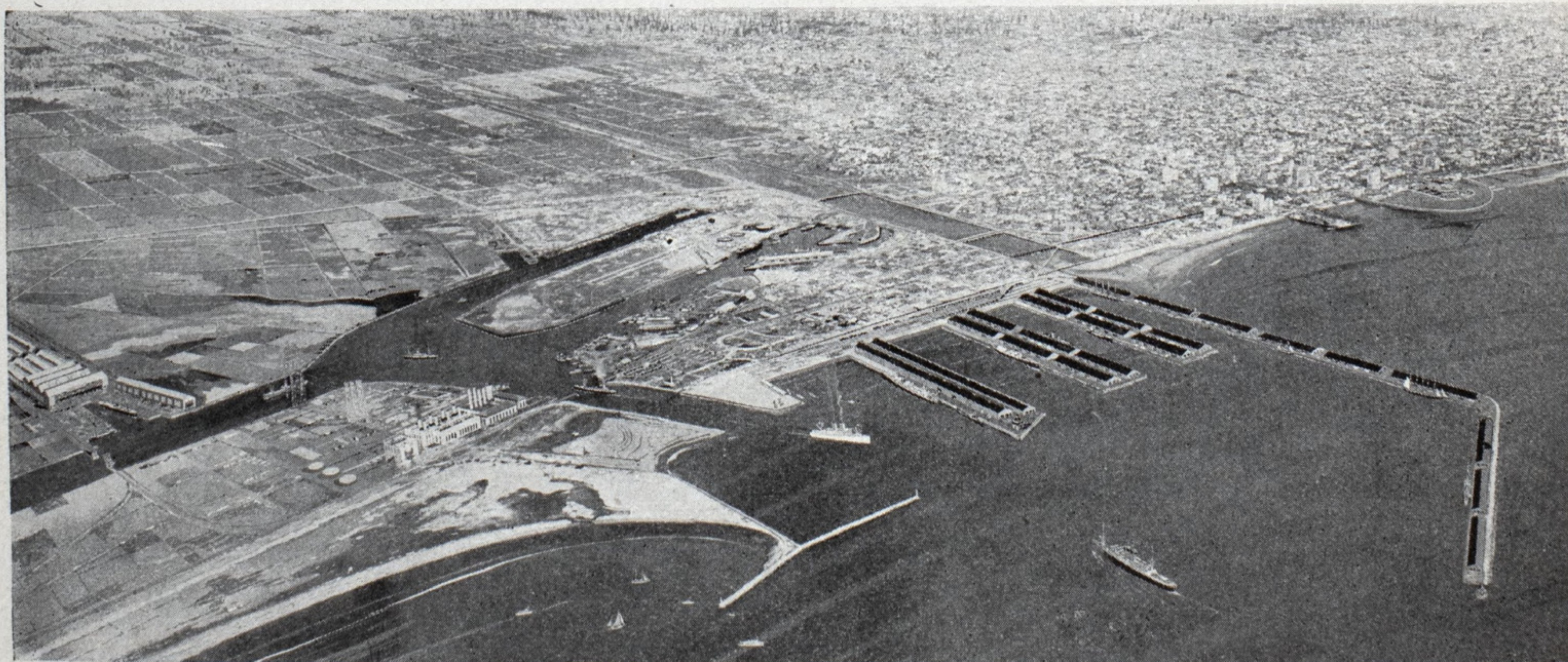
Due to the number of large fires which have occurred in the recent past at waterfront terminals in various parts of the United States and Canada, great interest has been aroused in ways and means of protecting structures of this type. The fire loss record on this class of property has been unfavorable over a long period of years and has averaged about \$120,000 per fire. In industrial properties the average loss is \$7000.

Courtesies of the Sea

Recently the Canadian Pacific liner *DUCHESS OF BEDFORD* made her way up the Clyde greeted by screaming sirens from ships in the river. All of which to the mind of a grizzled old ferry captain, seemed to be too much fuss to make over a mere liner. A Glasgow journalist tells the tale as follows:

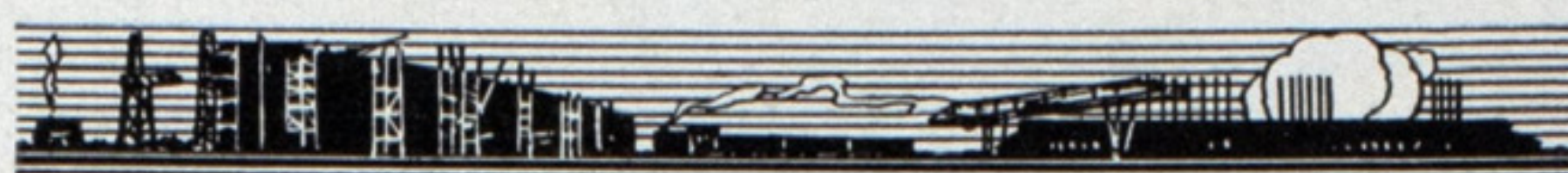
"Great indignation was caused aboard the *Erschine* ferry (50 tons) yesterday, when the *DUCHESS OF BEDFORD* (30,000 tons) went up the river. The gallant captain of the ferry foreseeing the clash in mid-stream of two monsters of the deep flew the signal, 'am going astern.' To within the captain of the *BEDFORD* replied, 'Which is your stern?'

"Interviewed afterwards, the veteran captain of the ferry declared his intention of bringing the whole matter before the board of trade. 'I haf neffer seen such less manners anyway,' he declared in ringing tones, and added bitterly, 'She will just be a big tammed floating hotel.'"



Harbor of Long Beach, Calif., Showing Present and Future Possibilities for Harbor Development as an Ocean Port

Useful Hints on Cargo Handling



LIFE of wire rope is materially reduced by idleness during shut-downs or slack-work periods. Even though there may appear to be sufficient lubrication and protection reaching the inside wires, unless there is motion or working to carry the lubricant to the working parts, there can not be complete lubrication; hence, parts not so protected become pitted from the action of corrosion. Unless the inside wires are thoroughly protected, this corrosion is likely to result in broken wires when load is again applied. A greater percentage of the estimated or expected rope life can be realized if wire rope equipment can be worked occasionally even though there may be no real work for the machine to do.

Longshore Labor Studied

THE United States department of labor recently issued a 559 page volume on *Cargo Handling and Longshore Labor Conditions*. This report was prepared by Dr. Boris Stern of the bureau of labor statistics and it is primarily a study of the productivity of longshore labor. The opening paragraph of the report, part of which is quoted below, indicates the excellent understanding of the problems involved.

"The principal difficulties," says the report, "were due to the multiplicity of variable factors involved in cargo handling . . . No two ports, no two companies, no two piers and no two ships are exactly alike so far as the nature of the cargo or the method of cargo handling is concerned. Each ship, or rather each voyage of the same ship, is an independent unit having but slight, if any, relationship to its previous or subsequent voyages."

The author points out that the labor productivity in loading and discharging cargo is affected by many factors including the physical condition of the ship, the kind and quantity of cargo carried and the distribution within the ship. It is also affected by the general and physical conditions of the dock and by the stevedore equipment and by the size of the gangs. Directly and indirectly many other major and minor factors influence the productivity of labor in handling ships cargoes. So numerous are these factors that doubt has been expressed as to whether it is possible to arrive at an average produc-

THIS page is being devoted to short items on all matters having to do with the more efficient turn-around of ships. These items are intended to be of a helpful nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

tivity of labor which would fairly represent conditions in any particular port.

On Watching Your Step

WATCH your step is a familiar slogan, but it is evident that it still needs to be emphasized. Where causes for accidents have been studied, it has been found over one period that one-third of the accidents in the deck department of a vessel was due to falls. In the engine department the same cause resulted in 25 per cent of all injuries received. The same holds true in the steward's department and even more so as in this case 46 per cent of all accidents resulting in injuries resulted from falls of persons.

Self Insurance Program

IT IS wise to work out a self insurance program in such a manner that proper reserves are built up to take care of the costly accidents which may occur in the future. A company which claimed that its compensation cost less than 3 per cent referred only to actual payments. Nothing was added to build up a reserve. Another company has a rate over three times as high, not because its record is poor, but because they know the soundness of building an ample reserve. This reserve fund is kept separate from all other company funds—it is even kept in a different bank.

Loading Flour on Ships

IN SPITE of the complexities involved, the report referred to in a previous item is a valuable source of information on the productivity of labor and earnings, the

comparative efficiency of various ports and the comparative efficiency of various cargo handling methods.

The report gives in tabular form the productivity of longshore labor in loading flour in the following ports: Seattle, Tacoma, Portland, Astoria, Galveston, Houston, Port Arthur, and Norfolk. It is pointed out that in these ports flour is loaded in either full-ship cargoes or in quantities sufficiently large to make it possible to determine the productivity of longshore labor in loading this commodity. With certain exceptions the methods used in these ports do not differ from the usual method of cargo handling in these ports. The productivity of labor in loading flour was found to vary from 0.68 long ton per man per hour for Port Arthur to 1.75 long tons per man per hour for the ports of Tacoma and Portland. Many other figures are given in concise tabular form which would be worthy of study by anyone responsible for improving output and reducing cost of cargo handling.

Quick Cargo Handling

NOTHING so convinces a man as a practical example. When the Dollar liner *PRESIDENT COOLIDGE* arrived in San Francisco on her last trip from the Orient, it was necessary to advance her sailing schedule one day in order to give her a day extra in New York for drydocking. Discharging and loading at San Francisco was accordingly speeded up to make this possible.

Among other items of cargo for the *PRESIDENT COOLIDGE* was 193 tons of canned fruit lying on the Encinal terminal at Alameda. The Bay City Transportation Co. was called on to ferry this freight to San Francisco. The cases of canned goods were loaded on skids. These skid-loads were placed on the lighters by three gas electric trucks. Trucks and cargo were ferried to San Francisco and the three trucks were used for delivering the skid-loads from the ferry to the pier alongside the *PRESIDENT COOLIDGE*, a distance of about 100 feet. Three men, each using a truck, transferred the 193 tons of cargo in 55 minutes, or at the rate of more than one ton per minute for the unloading. Each truck averaged 60 power pickups, transfers, and set-downs for the period.

Up and Down the Great Lakes

Ore Shipments at Low Point—Coal to Canadian Ports—Ships in Service—Lake Levels—Tanker Line Planned—Report Cargoes

DURING the month of August the total shipments of ore from upper lake ports amounted to 721,587 tons as compared with a total of 5,064,687 tons for the month of August, 1931, showing a decrease of 4,343,100 tons for the month of August this year as compared with the same month a year ago; a loss of 85.75 per cent. The total freight of all kinds, both east and west bound through the United States and Canadian canals at Sault Ste. Marie, Mich. and Ontario for the month of August amounted to 3,095,319 short tons. Among the items eastbound was 23,084,371 bushels of wheat and 3,923,878 bushels of grain other than wheat; 802,460 barrels of flour. Among the important items west-bound was a total of 1,220,842 short tons of soft coal.

For the entire season of 1932 up to Sept. 1, the ore shipments from upper lake ports totaled 1,749,927 tons as against a total of 15,774,007 tons for the season of 1931 up to Sept. 1. This indicates a decrease of 14,024,080 tons or 88.9 per cent for the present year up to Sept. 1, as compared with 1931.

Increased Coal Shipments

An interesting commentary on the effect of custom or habit in transportation due to the opening of the Welland ship canal is the reported increase in the movement of coal from Lake Erie to Canadian ports. In fact it is reported that more coal has been moved from Lake Erie to Canadian ports this year than ever before. An increasing number of Canadian vessels as well as some American vessels are engaged in this trade.

More Ships Commissioned

Nothing could more clearly indicate the condition of the bulk cargo trade on the Great Lakes this year than the following figures. There are some 332 bulk freighters on the Great Lakes. Of this number there were in commission on June 23, 67, or 20.18 per cent. Of these 67, from 15 to 20 were engaged in carrying ore. On Aug. 1, 76 bulk freighters were in commission, representing 22.89 per cent of the fleet. On Sept 1, 90 bulk freighters were in commis-

sion, representing 27.1 per cent. Of this number about 22 in which are included 9 vessels owned by the Pittsburgh Steamship Co., vessel subsidiary of the United States Steel Corp. were engaged in carrying ore. The increase in number of vessels in commission Sept. 1, was due, not to an increase in ore movement, but mainly for carrying and the prospects of carrying coal and grain.

August Lake Levels

The United States Lake survey reports the monthly mean stages of the Great Lakes for the month of August as follows:

Lakes	Feet above mean sea level
Superior	602.92
Michigan-Huron	578.54
St. Clair	574.03
Erie	571.51
Ontario	245.59

Lake Superior was 0.24 foot higher than in July and it was 0.62 foot higher than the August stage of a year ago.

Lakes Michigan-Huron were 0.12 foot lower than in July and they were 0.41 foot lower than the August stage of a year ago.

Lake Erie was 0.24 foot lower than in July and it was 0.02 foot lower than the August stage of a year ago.

Lake Ontario was 0.31 foot lower than in July and it was 0.70 foot higher than the August stage of a year ago, 0.48 foot below the average stage of August of the last ten years.

Must Report Cargoes

It is apparent that the Canadian authorities intend to make an accurate record of cargoes discharged or loaded in the Welland ship canal. In order to do this, it is necessary that every master transiting the canal carefully reports the kind and amount of cargo so discharged or loaded. The engineer in charge of the Welland ship canal has issued the following announcement:

"Masters of vessels are hereby notified that they must report all cargoes loaded or discharged anywhere in the canal, such report to include tonnage and description of cargo and is to be made at the administration building at Port Weller

or Port Colborne before the vessel leaves the canal.

"Failure to make reports as above instructed will be taken up by the department of railways and canals with the owner of the vessel for such disciplinary action as it may see fit to take."

Plans Tanker Service

A plan is being considered to move a large volume of gasoline from the Gulf coast by way of the Mississippi river to river points readily accessible by rail to Chicago. A Chicago organization is understood to be contemplating the project, which would develop into a monthly transportation of a million gallons of the fuel. The plan contemplates use of a self-propelled tanker which will tow a tank barge, leaving cargoes at refining points on the gulf for movement to East St. Louis and Peoria, Ill., and Evansville, Ind. Later, with the opening of navigation to Chicago, it is expected that the bulk carriers will go direct to the metropolitan area.

Lake Michigan Traffic

Freight traffic on lake steamers out of Chicago showed a moderate improvement during September as compared with August. Shipments so far this year showed a decrease of about 15 per cent from the 1931 traffic. The decline in passengers carried this year approximated the decline experienced in freight shipments. The excursion season ended Sept. 11 and was regarded as fairly satisfactory from the standpoint of business, in view of general conditions. Regular passenger service will continue throughout the winter.

Another Lemoyne Record

Again come reports of another new record by the freighter Lemoyne of the Canada Steamship lines and the largest freighter on the Great Lakes. Toward the end of August the Lemoyne cleared from the port of Lorain, O., with a cargo of 15,158 net tons of bituminous coal bound for Hamilton, Ont. The Lemoyne was loaded at the Baltimore and Ohio dock and her tremendous cargo was the equivalent of 203 freight cars of coal.

Outlook for Ore Shipments in 1933 Improved

OUTLOOK for the Lake Superior iron ore industry in 1933 is much brighter than the actual situation in the season now drawing to a close, but some hurdles still are ahead.

It has been a battle for two years now to reduce stocks and at the same time maintain some rate of mine operations, and this problem has not yet been solved. The industry will enter the new year with stocks at mines, lower lake ports and blast furnaces substantially above the average, but it is more confident this time that increasing consumption will soon take up the slack.

Producers are beginning to schedule fall and winter operations. Six or seven underground mines on the Menominee range in Michigan, that have been down many months, will resume about Nov. 1. Mines in other districts, long inactive, will start up. But others that have been operated during the summer, including open pits, will be off during the winter.

Stockpiles Are Growing

Plans still are dictated more by the necessity for providing work than by an immediate need for ore. The low rate of shipments this year, resulting in a total of approximately 3,000,000 tons—least in 47 years—has caused an accumulation of about 10,000,000 tons in northern stockpiles, whereas the normal at this time is near 4,000,000 tons. These stocks will be increased this winter if mining companies do as they propose, giving work to regular employees

to enable them to support themselves and families.

Stocks at lower lake ports and furnaces at the moment are below average, but consumption is not biting into them to any great extent, and by spring the situation will be reversed, more on hand than "normal." The indicated stocks for Oct. 1 are 32,250,000 tons, compared with an average of 38,000,000 tons. Judging by recent consumption, and allowing for a moderate increase over the remainder of the year, the stocks Dec. 1 probably will be reduced to 31,500,000 tons. The average for Dec. 1 is 40,000,000 tons.

Winter Consumption Uncertain

Consumption during winter and early spring usually reduces stocks to 20,000,000 tons by May 1. Allowing for a 50 to 60 per cent increase in consumption from Jan. 1 to May 1, the actual stocks are likely to come out near 26,500,000 tons, or around 6,500,000 tons above average. It is an uncertain prediction as to what the first four months next year will develop in ore consumption, but it is a safe venture to say that stocks will be above normal.

One month's normal shipment from upper lake ports to lower lake docks is 7,000,000 to 10,000,000 tons. Therefore one good month in the fore part of next year will cut stocks down practically to normal, and thus attain the object for which the industry has been striving.

Large stocks at furnaces have been a stumbling block all summer.

Consumers have viewed their stockpiles as so much cash. Hence shipments from upper lakes this year were reduced to a minimum, barely keeping up with the consumption rate. Operators up north have had to keep under some headway, to provide work, and to smooth down taxes.

There has been no wholesale surrendering of leases just to escape royalties; in fact there have been comparatively few. What has happened has been a rather general revision of terms applying to minimum shipments. Many leases provide that lessors ship a certain minimum quantity of ore each season. Some lessees temporarily waived this provision in whole or part; others deferred it, requiring that future shipments make up for the deficit this year.

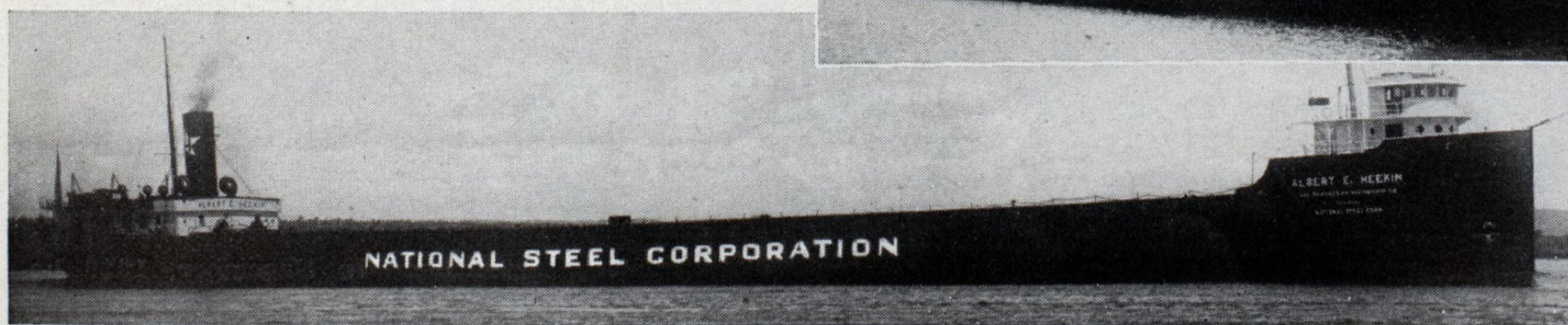
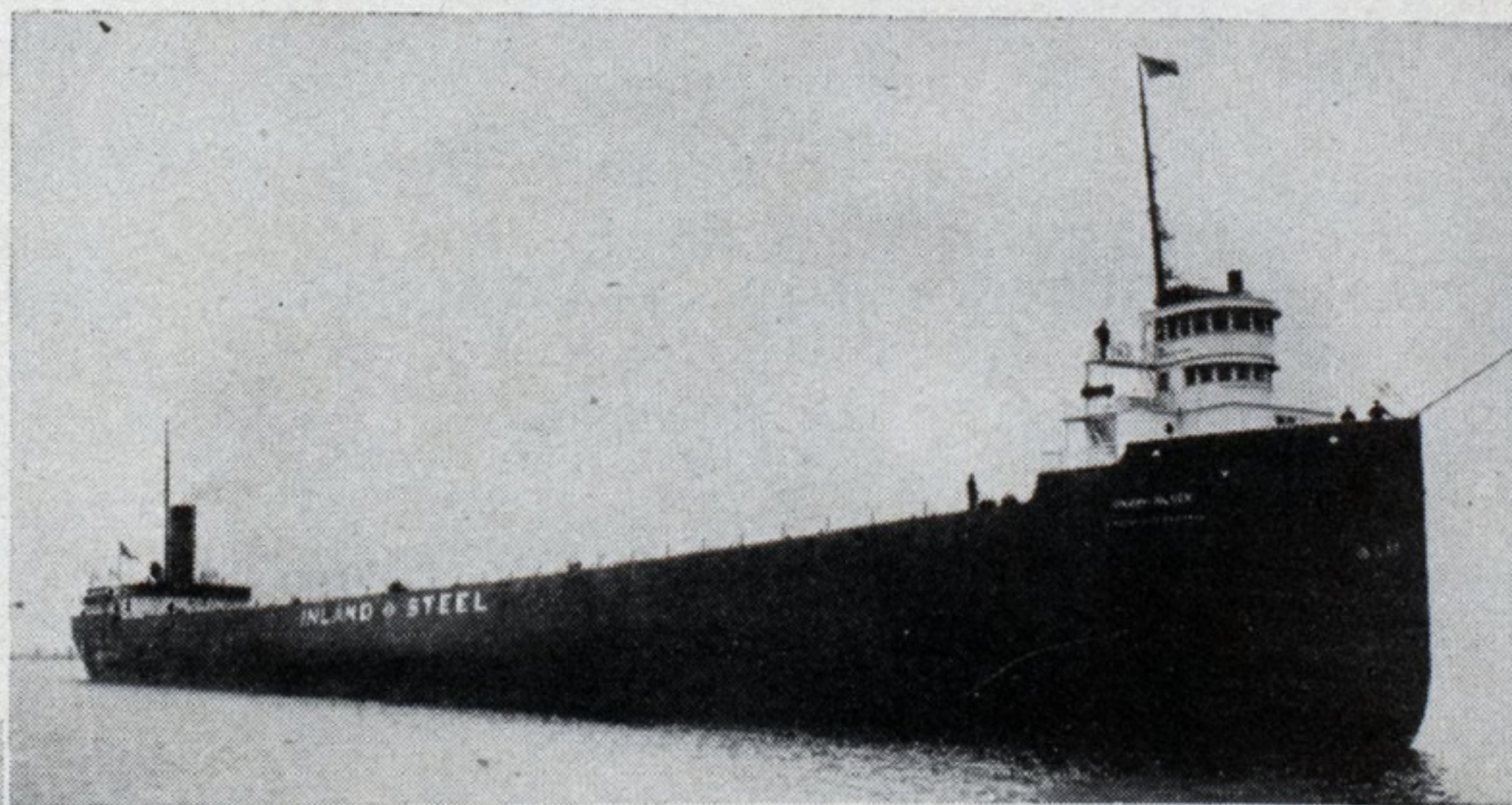
While the arrangements have not been wholly satisfactory to the majority of producers, trying to make both ends meet, they have been in numerous instances better than the terms originally agreed upon.

The American Welding society will hold its twelfth fall meeting in Buffalo the week commencing Oct. 3. An excellent program of a large number of interesting papers has been prepared. The meeting will last through the week ending with an inspection trip Friday morning, Oct. 7.

Morning technical sessions and committee meetings will be held at the Statler hotel. Afternoon sessions will be held at the One Hundred Seventy-fourth Regiment armory.

Bids will be received in the office of the United States engineers, 333 North Michigan avenue, Chicago, until 10 a.m., Oct. 15, and then publicly opened for furnishing and delivering operating machinery for the lock gates at Kampsville and LaGrange locks on the Illinois waterway.

WHEN the National Steel Corp. and the Inland Steel Co. transport iron ore on the Great Lakes they tell the world about it. Large white letters on the sides of their hulls identify the seven National and three Inland freighters. Of the 332 bulk freighters on the Great Lakes, 67 were in commission June 23; 76 on Aug. 1; 93 at present. Of the 22 hauling ore, 9 are Steel corporation ships



Personal Sketches of Marine Men

Rear Admiral George H. Rock C. C. U. S. N.; Retired, Heads Webb Institute

By Lynne M. Lamm



FOR 47 years, from midshipman to rear admiral and chief constructor, he has served the American navy with distinction.

IN HIS selection as head of Webb Institute its tradition for thorough, sound training will be carried on and strengthened.

HE BRINGS to his new duties matured judgment, a fine technical grounding and long experience in ship design and construction.

MERCHANT shipbuilding should be on a high plane," said Rear Admiral George H. Rock, chief constructor of the navy and chief of the bureau of construction and repair, to the writer shortly before retiring from his life's work on Oct. 1. This is in accord with the traditions which the admiral has upheld in the navy throughout his 47 years of active service. He will be 64 years old on Nov. 21. At his own request his retirement on reaching the age limit of 64 has been anticipated by a brief period in order to permit him to take up promptly his new duties as head of the Webb Institute of Naval Architecture in New York city.

His selection for this important post will make possible continued effective use of the experience acquired during his long and invaluable service to the navy. With reference to his new work he strongly feels that the Webb Institute of Naval Architecture, for which he has always had the highest regard and respect, must be maintained at a high standard of vigorous and useful accomplishment and that the beneficial relations which should exist with the shipbuilding and ship operating interests of the country is quite necessary for the future proper development of our merchant marine.

He is known as a hard worker, painstaking in details and as a keen observer who has attained a remarkable grasp of the many varied intricacies of practical ship construction. But his friends also know that he can play as well as work. He is devoted to tennis and hand ball, both of which he plays with a strenuousness that would do credit to a far younger man. He is also fond of shooting and fishing. This combination makes for poise, good judgment, tolerance and a true sense of humor.

It is a generally accepted fact that government officials do not always get along well with members of congress as to appropriations for their respective departments. Admiral Rock was an exception. He made the members of congress understand and sympathize with him in the importance of his work.

"I understand that you will retire before the time for another hearing rolls around," said Representative William A. Ayres, of Kansas, chairman of the subcommittee of the house committee on appropriations, having charge of navy department appropriations.

"We will miss you," he continued, "and I am sure the department and the service will miss you. Your broad knowledge and fine faculty for enlightening us laymen has been of the greatest assistance.

"We wish that when you lay down your official duties, that whatever your aims and desires may be, you may be able to realize them in full measure. You will leave with our sincere and cordial best wishes."

Born at Hastings, Mich., Nov. 21, 1868, Admiral Rock was appointed to the naval academy in 1885. After graduation, he took a post graduate course in naval architecture at the University of Glasgow, Scotland, where he obtained the degree of bachelor of science and was transferred to the naval construction corps in 1891. He was promoted through the various grades attaining the rank of lieutenant commander, July 1, 1905; captain, Aug. 29, 1916; and rear admiral, construction corps, Aug. 1, 1926.

After various tours of duty, Admiral Rock was ordered in 1915 as construction officer in the industrial department of the New York navy yard, where he continued to serve until July, 1921. As construction officer, he was detailed upon the United States' entry into the World war, to fit out captured German merchant ships for naval transport duty. In repairing the engines of these ships, Admiral Rock for the first time in naval usage, employed electric welding extensively. For his World war service, he was awarded the navy cross "for exceptionally meritorious service."

In March, 1929, Admiral Rock was appointed a delegate to the international conference on safety of life at sea, which met in London, and served as chairman of the ship construction committee. In November, 1929 he was commissioned chief constructor and chief of the bureau of construction and repair.

Marine Review

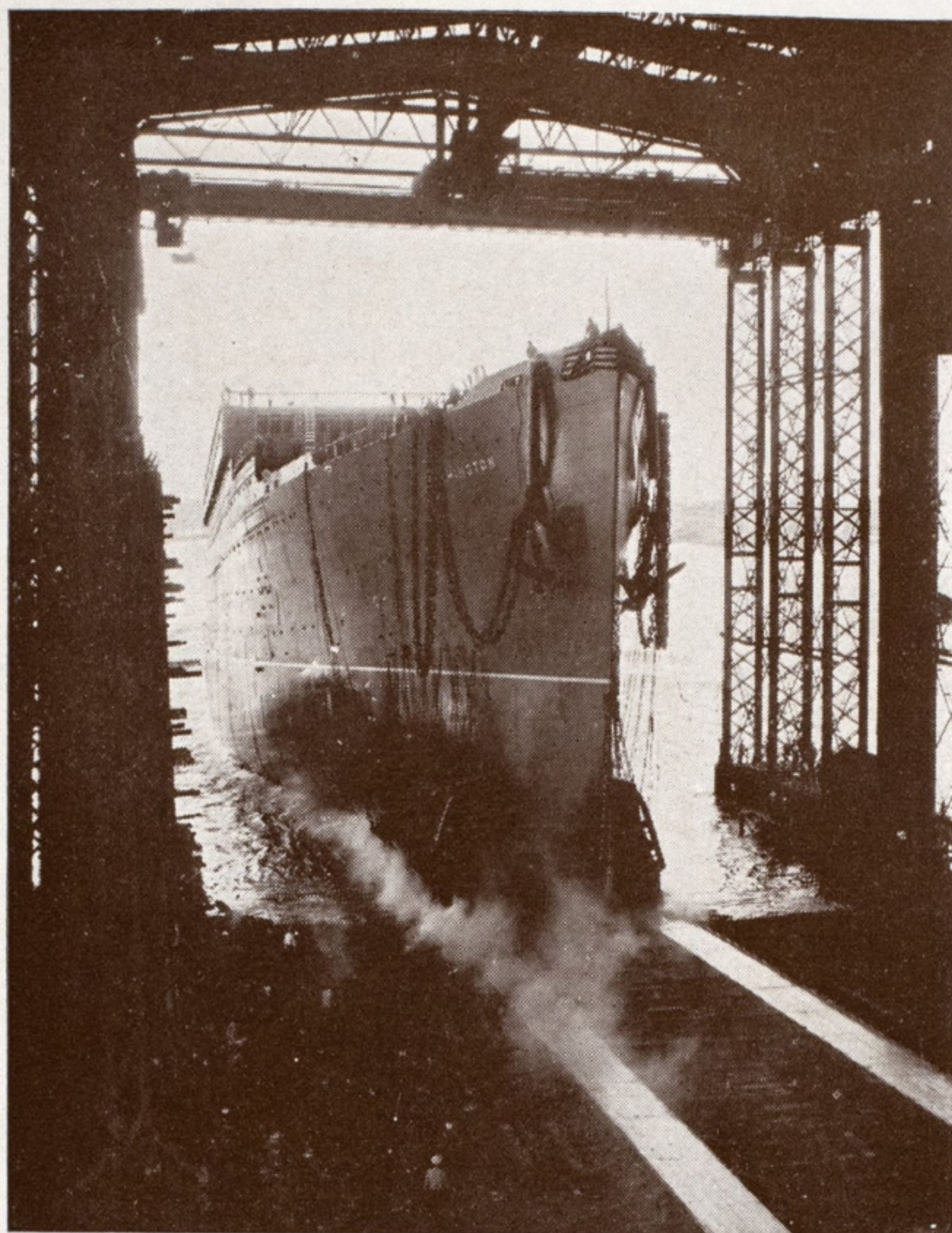
Reg.
U.S.
Pat.
Off.

*The National Publication Covering the Business of
Transportation by Water*



Grand Salon, T. S. S. MANHATTAN

October, 1932



Launching of the T. S. S. Washington, sister ship of the Manhattan, August 20, 1932. The largest and highest powered American built ships.

Builders of Ships Are Builders of Trade

EVERY new ship that glides majestically down the ways into deep water is a symbol of growing economic power for the nation whose flag she flies. Not by accident have the great seafaring peoples of history dominated the commerce of their worlds. Throughout the eras of man-power, sail and steam, the romance of the sea has been definitely linked with the broader romance of business. ❖ ❖ ❖ ❖

NEW YORK SHIPBUILDING COMPANY

Main Office and Yard:
CAMDEN, N. J.

New York Office:
420 LEXINGTON AVENUE



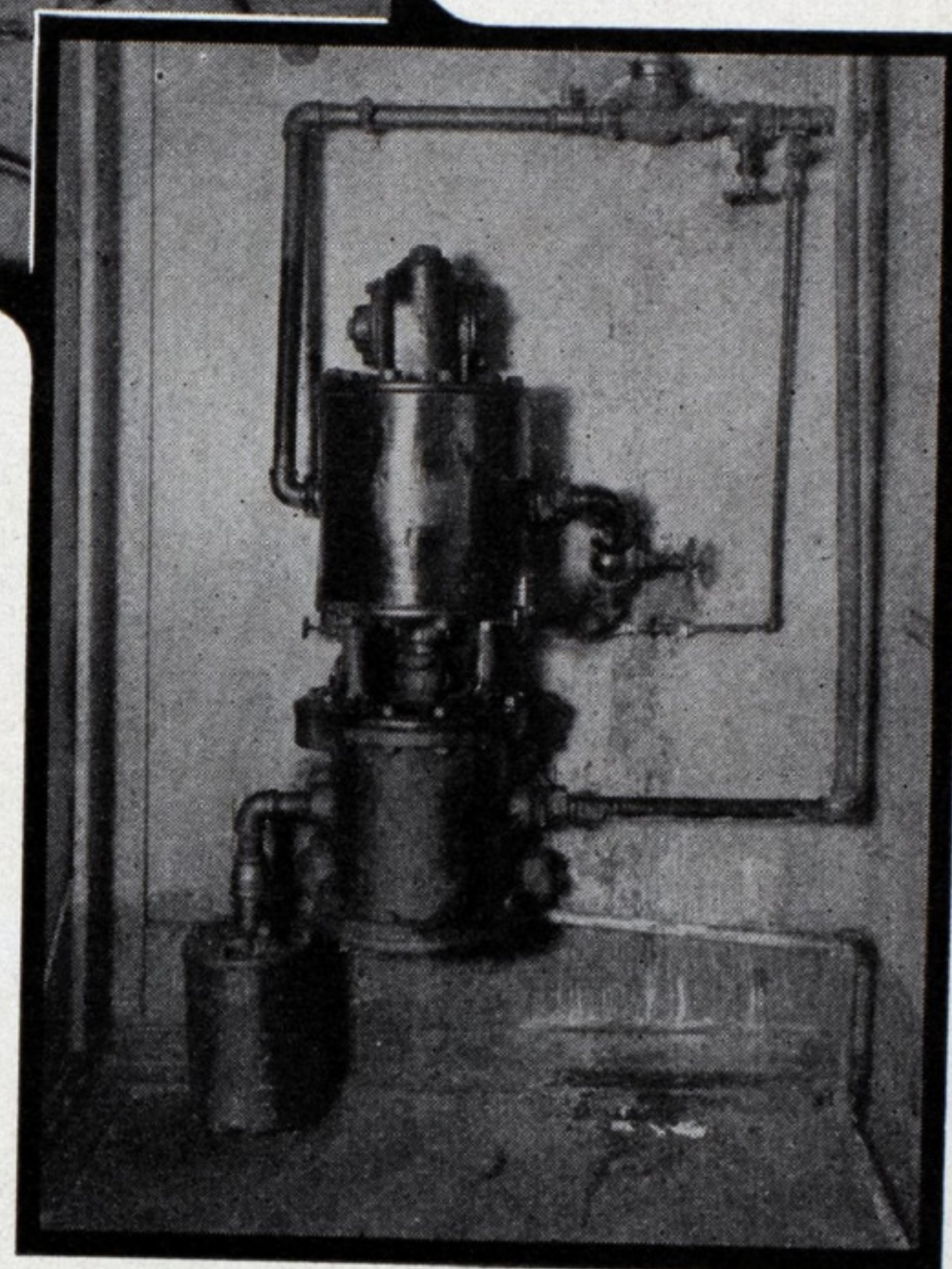
How to Keep Re-conditioned Ships In Ship-shape Condition

To meet the demands of modern service several steamship companies are having their vessels re-conditioned to provide for more efficient operation. Modification of lines, increase in power, addition of auxiliary equipment—these are some of the improvements being made.

The value of a source of compressed air on sea-going ships is now being more fully realized and many of the recently reconstructed boats have the Westinghouse Steam Driven Air Compressor. Among the fleets so equipped are those of the American Diamond Lines, the Scantic Line, the Pennsylvania Shipping Co., and the Waterman Steamship Co.

Compressed air is the modern means of removing scale and applying paint for keeping a vessel in ship-shape condition while on long sea voyages—it is better, quicker, more economical. Westinghouse compressors are ideally suited for marine use.

WESTINGHOUSE TRACTION BRAKE CO.
Industrial Division Pittsburgh, Penna.

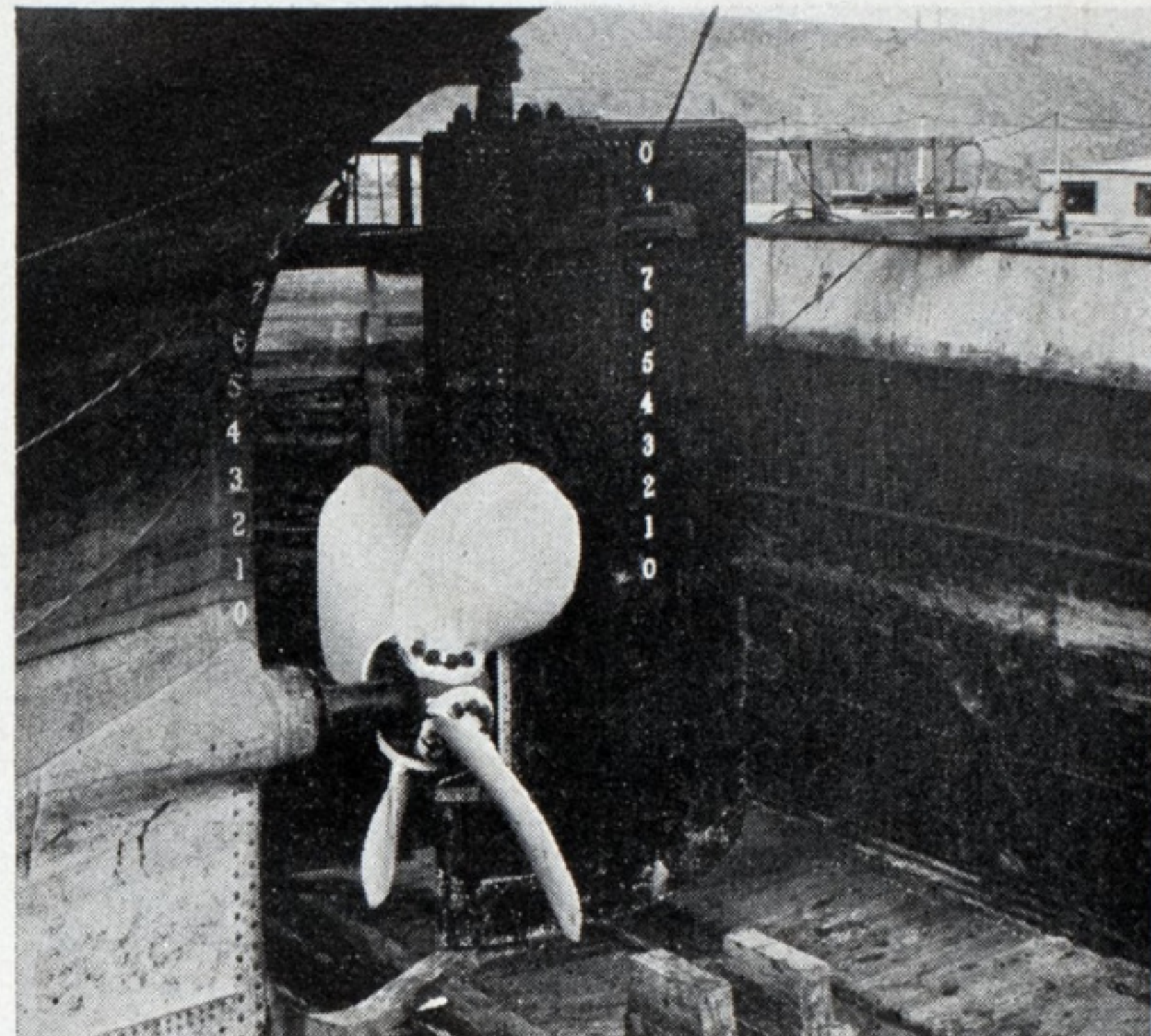


The Westinghouse Steam Driven Air Compressor is compact, rugged, easily installed. Ideal for use on board ship, in the harbor, or in the ship yard. Made in four sizes, 35, 49, 66 and 150 cu. ft. displacement. We also make a complete line of motor driven compressors.

9114

WESTINGHOUSE AIR COMPRESSORS
“QUALITY MACHINES FOR QUALITY SERVICE”

. *Announcing* THE AMERICAN SHIP BUILDING CO. BALANCED *Streamline* RUDDER



New rudder facilitates repairs to stern bearing.

DESIGNED and built for service on the Great Lakes by the Lakes' oldest and most experienced ship builders. Efficient—simple—low in cost. Can be quickly installed on any lake vessel. Requires no alterations.

This new rudder offers 4 important operating advantages.

1. Improved maneuvering qualities. Vessels fitted with A-S-B balanced streamline rudders respond to the slightest angles of the helm, thereby maintaining a straighter course.

2. Lower operating costs. The *streamline* form, properly proportioned and balanced, and the smooth, flush plating, bring about greater propulsive efficiency and a corresponding saving in operating costs.

3. Greater strength. Steel top and bottom castings are used in the construction with rigid internal structure and heavy shell. All shell plating is watertight, which makes the rudder very nearly self-supporting and means much less strain on the bearing.

4. Easier repairs—both to rudder and stern bearing. A watertight manhole permits complete internal inspection. A special patented feature makes it possible to withdraw the tailshaft sufficiently to re-line the bearing, without unshipping the rudder.

Write for particulars and quotations.

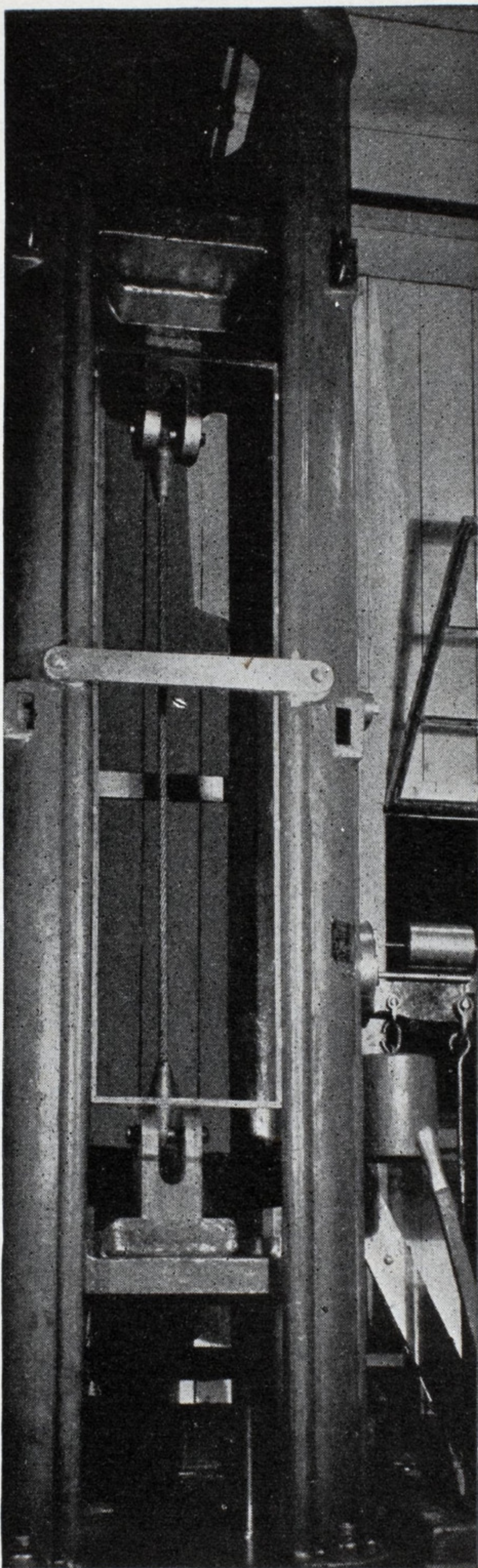
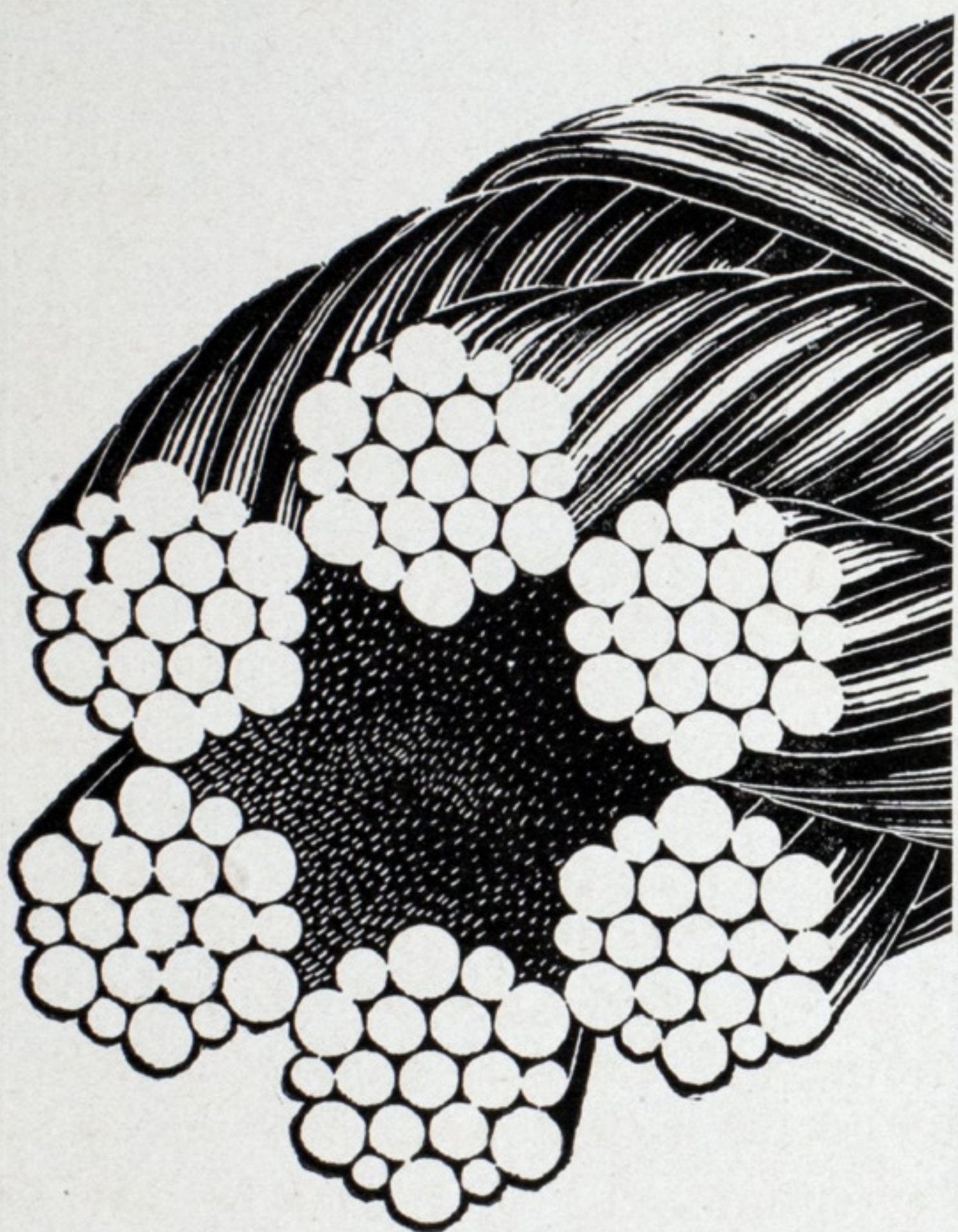
The AMERICAN SHIP BUILDING CO.

Main Office: Foot of West 54th Street, Cleveland, Ohio

.
 CLEVELAND American Ship Building Co.
 LORAIN American Ship Building Co.
 BUFFALO Buffalo Dry Dock Company
 SOUTH CHICAGO Chicago Ship Building Co.
 SUPERIOR Superior Ship-building Co.



*When we make
an affidavit*



UPON request, the Wickwire Spencer Steel Company will make an affidavit as to the ultimate strength of wire rope in any reel it sells. The figures stated are not the theoretical estimates of a slide rule but figures produced by actual breaking of samples of the rope in question. Whether called for or not, pieces of rope are torn asunder on this mechanical

Hercules at regular and frequent intervals. This is typical of the care employed by Wickwire Spencer in

the production of quality Wire Rope. WICKWIRE SPENCER STEEL COMPANY
41 East 42nd St. New York City. Buffalo; Chicago; Detroit; Cleveland; Worcester; Philadelphia; Tulsa, 314 East Archer Street; Pacific Coast Headquarters; San Francisco. Warehouses: Los Angeles, Portland, Seattle

WIRE ROPE

Send for our book. It is free and will prove of great value.

by Wickwire Spencer

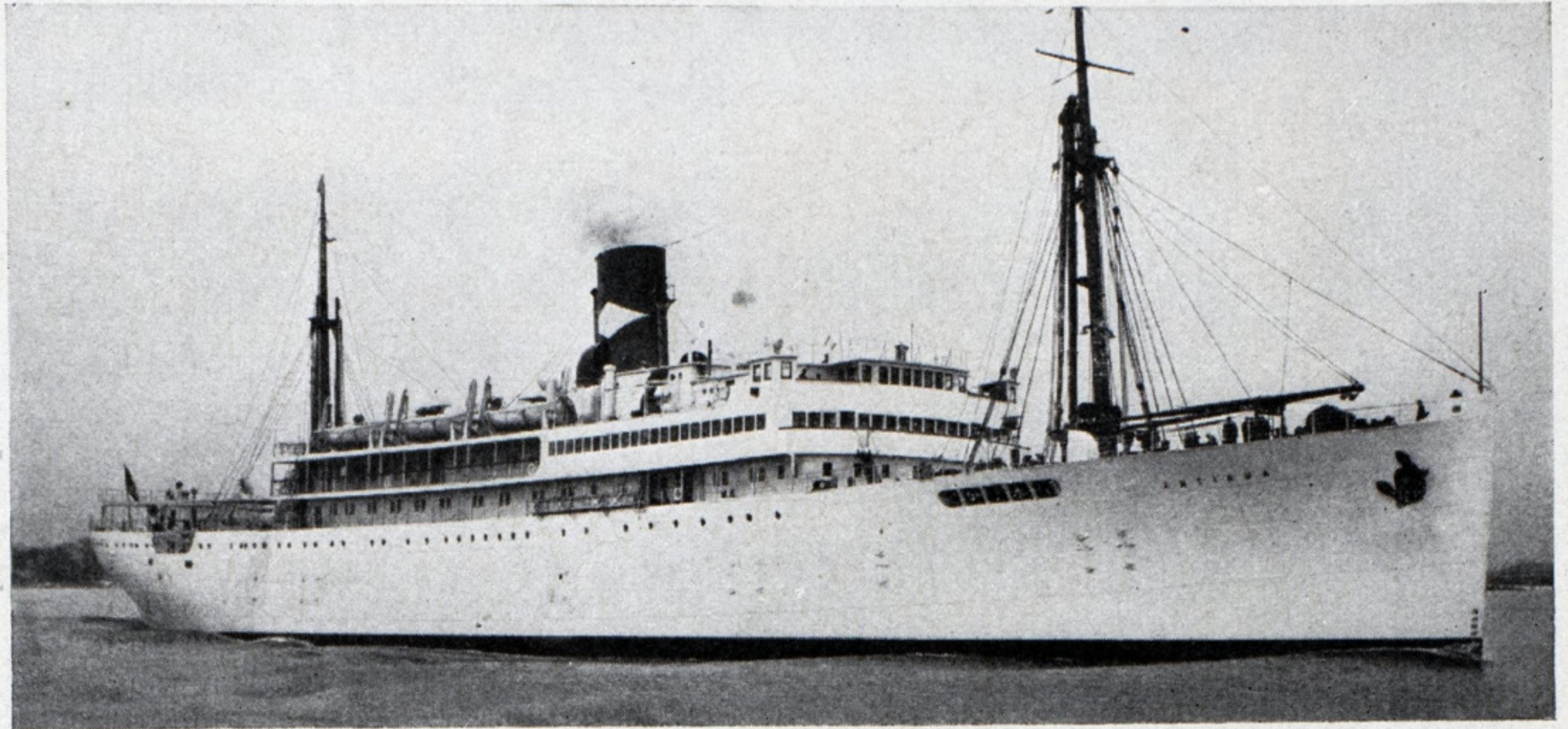


Additions to the Great White Fleet

THREE MAGNIFICENT SISTER SHIPS BUILT AT FORE RIVER PLANT

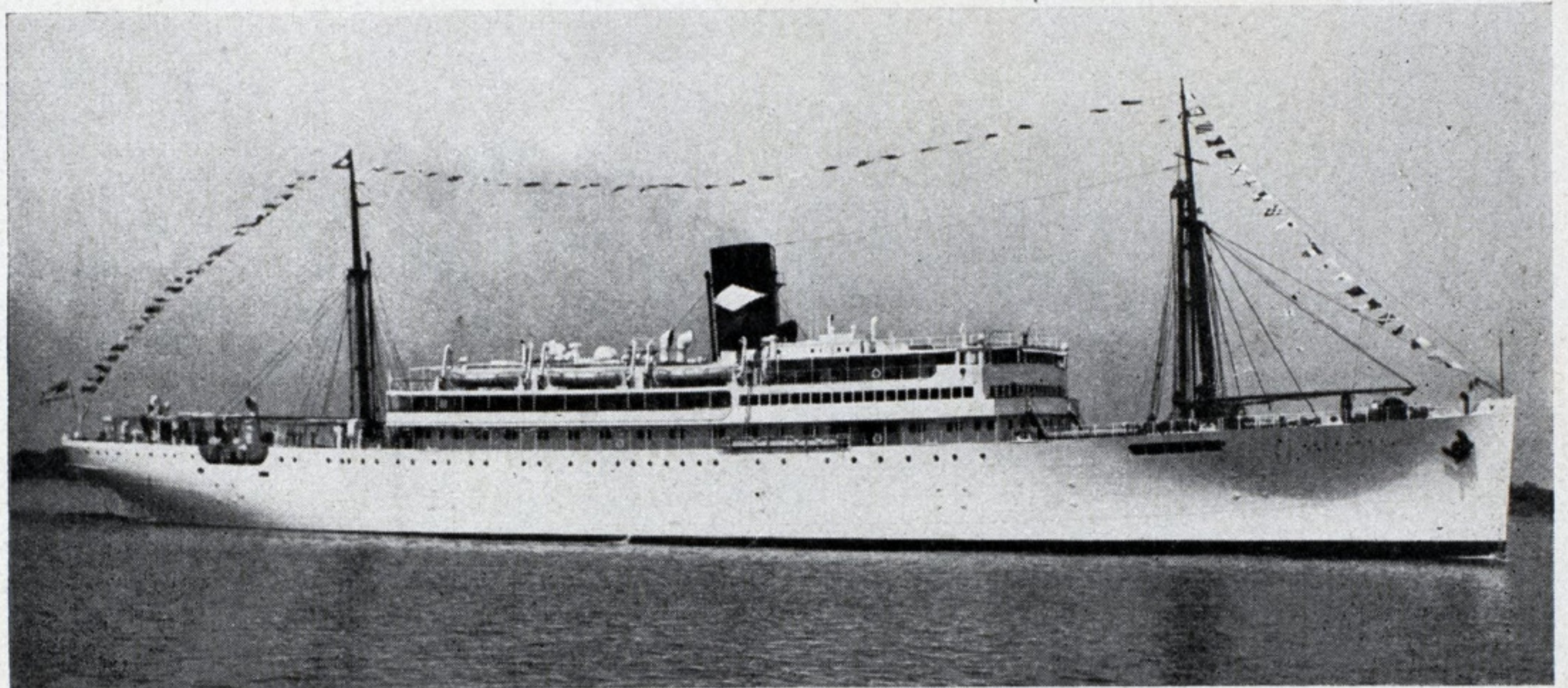
S. S. ANTIGUA

★ DELIVERED
APRIL 1st



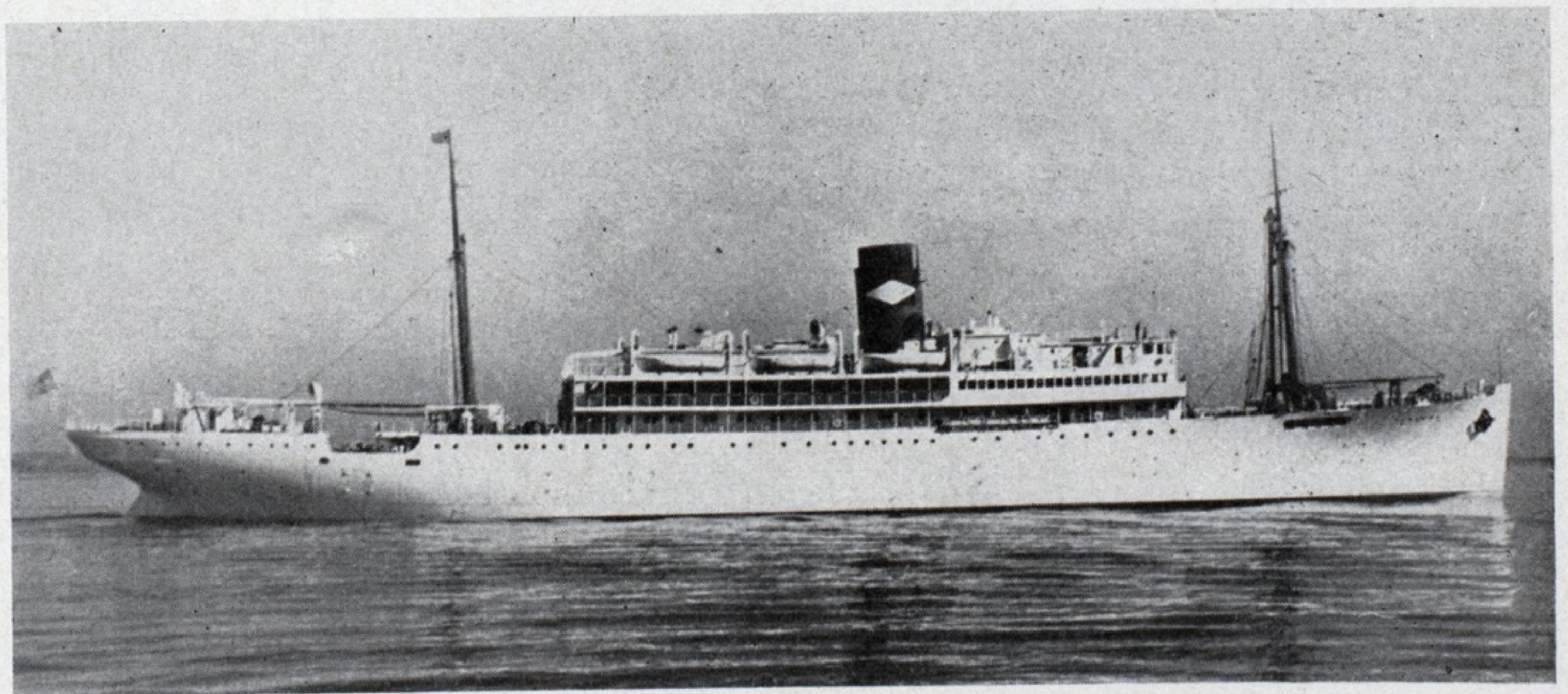
S. S. QUIRIGUA

★ ★ DELIVERED
JUNE 4th



S. S. VERAGUA

★ ★ ★ DELIVERED
AUGUST 5th



BETHLEHEM SHIPBUILDING
CORPORATION, LTD.



GENERAL OFFICES: BETHLEHEM, PA.

General Sales Offices: 25 Broadway, New York City...20th and Illinois Sts., San Francisco...*District Offices:* Boston, Baltimore and San Pedro



BETHLEHEM

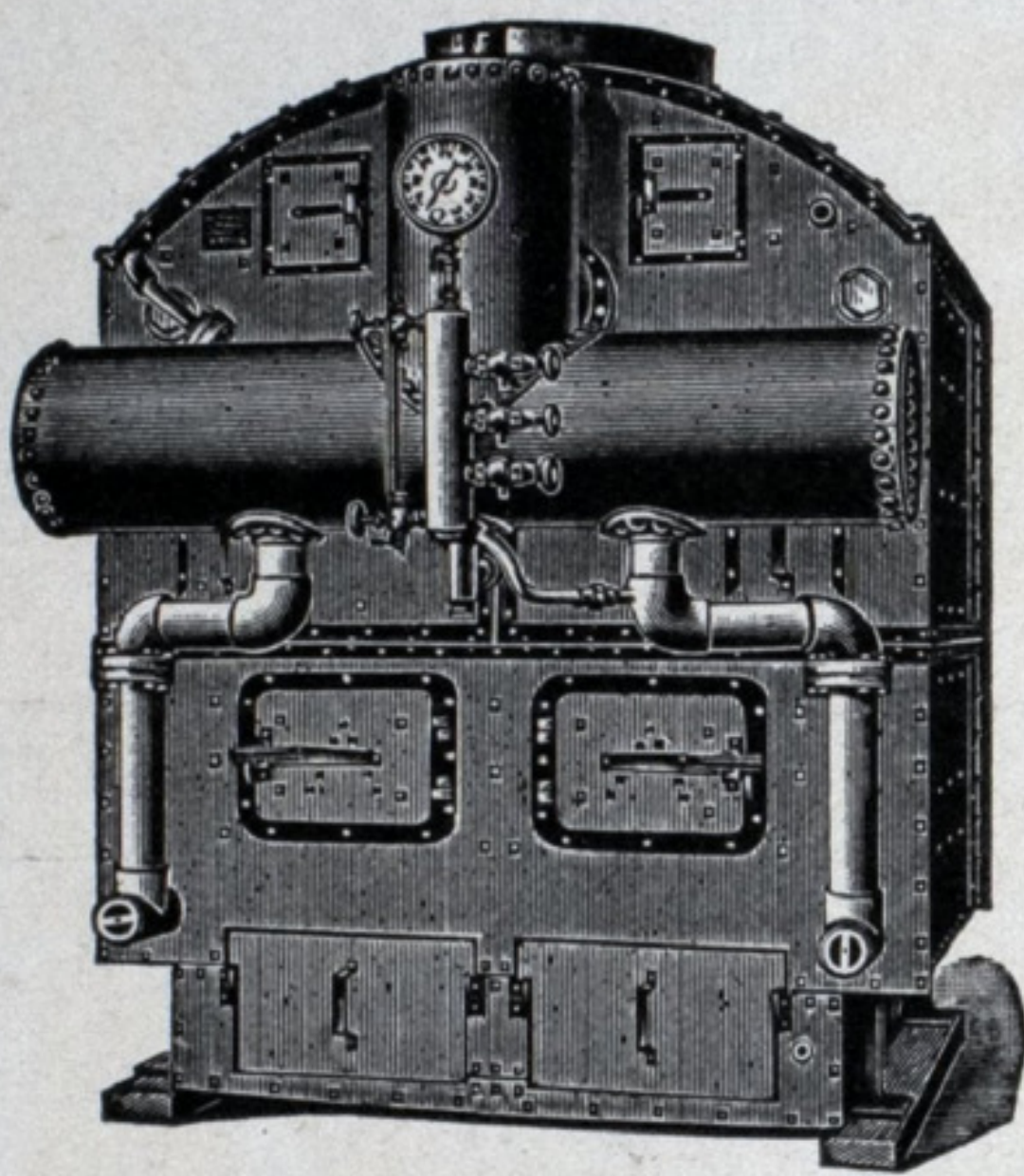


MANITOWOC SHIPBUILDING CORPORATION

Designers and builders of steel passenger and freight vessels, oil tankers, carferries, self unloaders, sand suckers, yachts, dredges, derricks, barges, scows, fire boats, lighters, tugs, marine engines, marine boilers, etc.

Excellent dry docking facilities for quick and economical repairs.

MANITOWOC, WISCONSIN



**Almy Water Tube
Boiler Co.**

Builders of
Sectional Water
Tube Boilers
for all types of
vessels

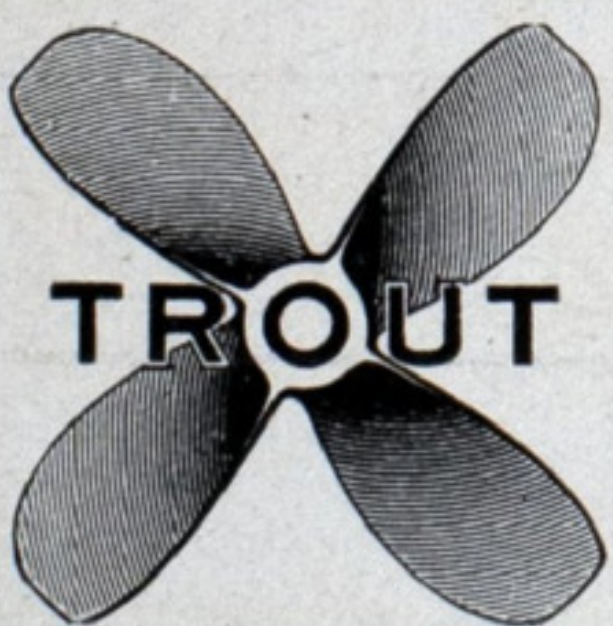
**Providence, R. I.
U. S. A.**

CATALOGUE FREE

OLDMAN BOILER WORKS, Inc.

Boilers, Tanks, Stacks, Struc-
tural Work and Castings

Boiler Repairing Promptly Attended to Day or Night
MARINE WORK A SPECIALTY ELECTRIC WELDING
Works: 36-40 Illinois Street - BUFFALO, N. Y.



**E. H. READING
PROPELLER WHEELS**

Machinery Repairs
226 Ohio St.

BUFFALO, N. Y.
'Phone Washington 5361



**St. Louis'
Popular
Fireproof
Hotels**



THE AMERICAN
275 ROOMS
EACH WITH A BATH
MARKET STREET at SEVENTH
RATES \$2.00 UP



THE ANNEX
226 ROOMS
EACH WITH A BATH
MARKET STREET at SIXTH
RATES \$1.50 UP

ST. LOUIS, MO.

Classified Advertisements

FOR SALE OR CHARTER

Steel Tug—"JOHN E. MEYER"; 108' x 24' x 14½'; 650 H.P. Triple Expansion Engine, Scotch Marine Boiler, 180 lbs. pressure.
Derrick Scow—"AMERICA"; 180' x 48' x 14½'; Heavy wood hull, 1800 tons capacity, 25 ton derrick forward, 18 ton derrick aft.
Tug and Scow in first-class condition. Now at Superior, Wisconsin. Complete details on request.

THE BARNETT & RECORD COMPANY

Engineers — Contractors
Docks — Grain Elevators — Heavy Industrial Structures
No. 700 Flour Exchange
Minneapolis, Minnesota

FOR SALE OR CHARTER: A GOOD TUG.
Address R. G. Evans, Cheboygan, Mich.

YOUNG DOCTOR WISHES TO JOIN WORLD
or other cruise in professional capacity. Ad-
dress Box 430, MARINE REVIEW, Penton
Bldg., Cleveland, Ohio.

FOR SALE—STEEL STEAM TUG 80' x 22' x 12'—600 H.P. ALSO
wooded hull steam tug, oil burner, 80' x 20' x 10'—400 H.P. Prices
very reasonable. Address Box 428, MARINE REVIEW, Penton Bldg.,
Cleveland, Ohio.

FOR SALE AT A BARGAIN. COOPER-BESSEMER 6 CYLINDER
125 H.P. full diesel engine. This engine has been used very little and
is in splendid condition. Address Box 429, MARINE REVIEW, Penton
Bldg., Cleveland, Ohio.

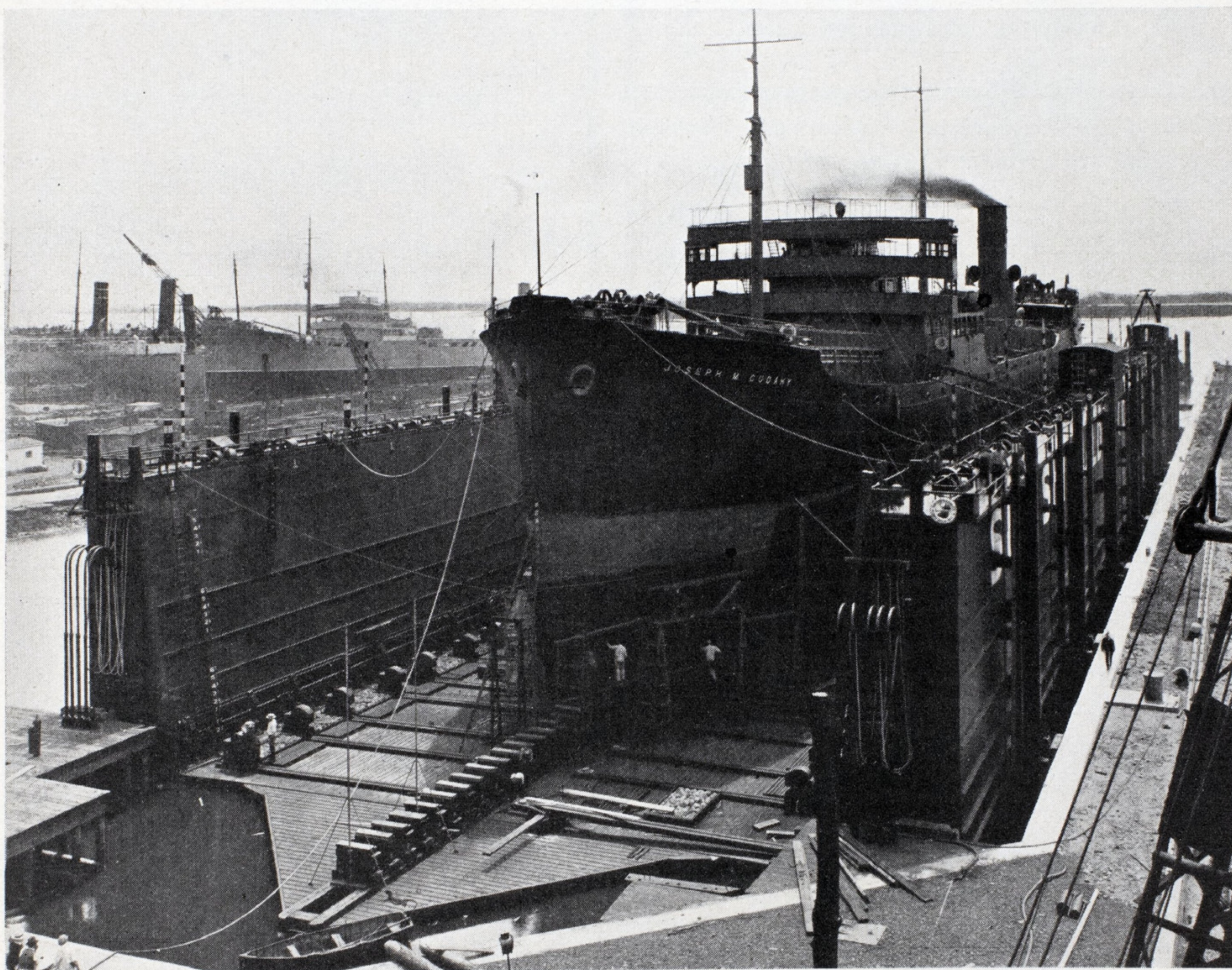
HAVE YOU A BOAT OR EQUIPMENT FOR SALE?

The classified section of MARINE REVIEW is for your convenience
—its value is proving worthwhile to everyone who uses it to buy
and sell.

If you want to buy or sell ships or marine equipment—need a man
for your organization—make it known to the entire marine industry
through the use of classified advertising in MARINE REVIEW.

Mail copy for your advertisement in the November issue today, so it
reaches us before October 20.

MARINE REPAIRS



Every Facility for Hull and Machinery Repairs

Two Floating Dry Docks

11,000 Tons Capacity Each

Diesel or Steam Engine Repairs

SUN SHIPBUILDING & DRY DOCK CO.

NEW YORK OFFICE
25 Broadway

Plant and Office
CHESTER, PA.

*2



HAMBURG-AMERICAN LINE

Passenger Services: New York to Cherbourg, Southampton and Hamburg. New York to Galway, Cobh (Queenstown), Cherbourg and Hamburg. North Pacific Ports to Hamburg, Bremen and Antwerp via Panama Canal.

Pleasure Cruises: Around the world, to the West Indies, to Northern Wonderlands.

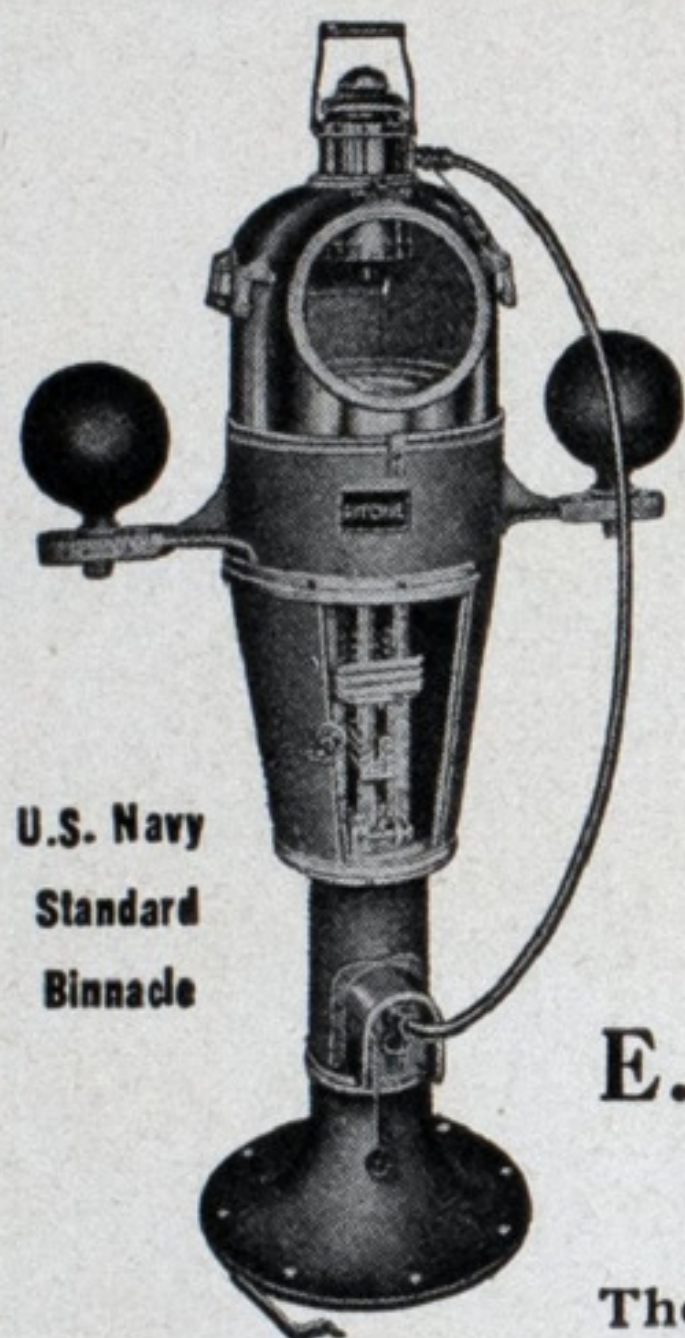
Freight Services: New York to Hamburg (8 days). Boston, Philadelphia, Baltimore and Norfolk to Bremen and Hamburg.

North Pacific Ports direct to Hamburg, Bremen and Antwerp.

HAMBURG-AMERICAN LINE

39 Broadway

New York



THE RITCHIE LIQUID COMPASS

The Standard Liquid Compass the world over.

Used Exclusively in U. S. Navy for over 40 years.

Over 65,000 on Merchant Vessels in all parts of the world.

Made in all sizes 2 to 12" dia.

Magnets for adjusting Purposes.

E. S. RITCHIE & SONS

Brookline, Mass., U. S. A.

Agents for the Great Lakes,
The Upson-Walton Company, Cleveland, Ohio

John J. Boland

Adam E. Cornelius

BOLAND & CORNELIUS

VESSEL OWNERS AND BROKERS

Marine Insurance Agents

Marine Trust Building BUFFALO, N. Y.



ANDREW J. MORSE & SON, Inc.

221 High Street BOSTON, MASS.

Established 1837

Diving Apparatus and Submarine Armor

Fire Protection Equipment

The Invincible Nozzle

Catalogues on request

Star Brass Mfg. Co.

53 Oliver Street -- Boston, Mass.

MANUFACTURERS OF

Accurate "Non-corrosive" Pressure and Recording
Gauges, Revolution Counters, Marine Clocks.

Dead Weight Gage Testers.

Marine, Safety and Relief Valves for all pressures.

Marine Whistles and Sirens.

Extra Heavy Renewable Globe, Angle and Check
Valves.

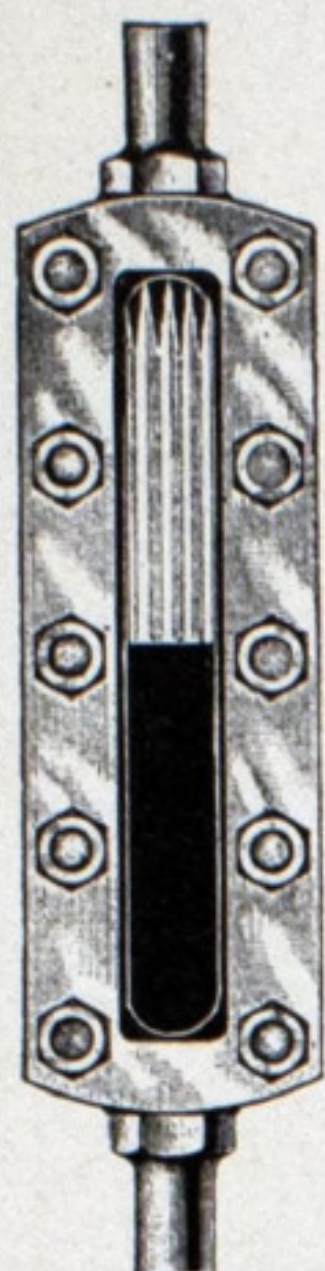
Star Outside Spring Steam Engine Indicators.

HIGH GRADE THROUGHOUT
SPECIFY AND ORDER THE BEST.

Branches: CHICAGO PITTSBURGH NEW YORK

INDEX TO ADVERTISERS

Almy Water Tube Boiler Co.	38
American and Annex Hotels	38
American Ship Building Co.	4
Babcock & Wilcox Co.	—
Bethlehem Shipbuilding Corp., Ltd.	37
Boland & Cornelius	40
Cramp Brass & Iron Foundries Co.....	Back Cover
Crandall Engineering Co.	—
DeLaval Steam Turbine Co.	—
Electric Storage Battery Co.	—
Fairbanks, Morse & Co.	—
General Electric Co.	42
Hamburg-American Lines	40
Hyde Windlass Co.	Back Cover
Isherwood, Sir Joseph W., Ltd.	—
Jerguson Gage & Valve Co.	41
Kingsbury Machine Works	—
Lane, C. M., Lifeboat Co., Inc.	41
Manitowoc Shipbuilding Corp.	38
Morse, Andrew J., & Son, Inc.	40
New York Shipbuilding Co.	Inside Front Cover
Oldman Boiler Works, Inc.	38
Reading, E. H.	38
Ritchie, E. S., & Sons	40
Samson Cordage Works	41
Selby, Battersby & Co.	—
Sharples Specialty Co., The	—
Sheriffs Manufacturing Co.	41
Sperry Gyroscope Co.	—
Star Brass Mfg. Co.	40
Sun Shipbuilding & Dry Dock Co.....	39
Troy Engine & Machine Co.	—
Westinghouse Electric & Mfg. Co.	—
Westinghouse Traction Brake Co.	3
Wickwire-Spencer Steel Co.	6



REFLEX WATER GAGES

Used on all types of boilers by all the Principal Navies of the world

"The Water Shows Black"

ADVANTAGES: Quick and reliable observation of the water level. Safe, sure and durable at high pressure. Not affected by cold air drafts. Most effective protection against injuries to boilers and workmen. Easily applied to all types of gage glass fittings.

When filled with WATER the Reflex Gage always appears BLACK. When empty it instantly shows WHITE. No mistake possible. This feature alone is worth many times the cost of the Reflex.

Send for catalog of Water Gage Apparatus

MANUFACTURED BY THE
**JERGUSON
GAGE & VALVE CO.**
WINTER HILL, SOMERVILLE, MASS.



LIFEBOATS DAVITS and FLOATS

MARINE EQUIPMENT

C. M. LANE LIFEBOAT CO., INC.
856 Humboldt St.
Brooklyn, N. Y.



Propeller Wheels and Blades

to fit any hub.

Sheriffs Manufacturing Co.
Established 1854
Milwaukee, Wis.

SAMSON SPOT Log Lines

Smooth, tough and durable; no adulterating material to stiffen it and decrease strength and durability. Solid braided of extra quality cotton yarn. Uniform in size and quality. Easily identified by the colored spots, our trade mark.

We also manufacture flag halyards, lead lines, tiller rope; solid braided cotton cord in all sizes for various marine uses. Ask for catalog and samples.



Trade Mark
Reg. U.S.
Pat. Off.



SAMSON CORDAGE WORKS

89 BROAD STREET BOSTON, MASS.

BOOKS

A selected list for the man interested in
Marine Subjects

ABELL—Stability and Seaworthiness of Ships \$5.00

Gives consideration to those practical problems affecting a ship's stability and seaworthiness which the shipmaster may be called upon to deal with or consider in the ordinary routine of his calling.

ADAMS—Modern Diesel Engine Practice \$6.00

A complete text book on every phase of diesel engineering, construction, and installation.

BEASLEY—Freighters of Fortune \$3.50

A quick moving tale of adventure of fighting and of the first attempts at crude commerce on the Great Lakes all of which helped to lay the foundations for what is today one of the richest and most powerful sections of the world.

CARR—Cost of Shipbuilding \$3.00

This book provides a short method in calculating the cost of the many different types of merchant vessels and to eliminate the practically obsolete system of figuring this class of work.

CHALKLEY—Diesel Engines for Land and Marine Work \$8.00

A discussion of the theory, operation and construction of the diesel engine as used in marine and land work.

CUTHBERTSON—Freshwater \$7.50

This book is designed to be of interest to all who want to know all they can about the

ships and those who want a general story of Great Lakes history with a glimpse at men, ships and events. Illustrated with a series of excellent pictures showing early types of lake craft, etc.

DOBBS—Canals and Inland Waterways \$2.25

This book is of especial value to students interested in the subject of canals and waterways and to those who for one reason or another desire enlightenment on the subject.

FORD—Practical Marine Diesel Engineering \$7.00

Deals with the construction and operation of the marine diesel engine from the viewpoint of the practical engineer.

HARDY—Bulk Cargoes \$6.00

A clear and important discussion on how bulk cargoes are carried and in what ways the nature of the bulk cargo has affected the design and construction of vessels.

MACELWEE—Ports and Terminal Facilities \$5.00

A thorough and detailed discussion of marine terminal facilities. Traffic conditions are analyzed and studied in their relation to port facilities for best service.

MANNING—Manual of Naval Architecture \$2.75

Prepared primarily for operating officers, students and all those who wish to become familiar with the subject of naval architecture

without any extensive previous knowledge of it.

MORRELL—Oil Tankers \$4.00

A complete and authoritative treatise on oil carrying vessels, the handling of bulk oil and the transportation of bulk oil by water. Covers the subjects of modern design, construction, repairs and operation with respect to hull, cargo system and machinery.

PERRY—Ship Management and Operation \$4.15

This book is the first to cover the subject and is based upon original research. Latest methods of organization and operation are described and illustrated. Organization charts showing the lines of advancement in various departments and fold-in drawings of main decks of modern ships are included.

ROSBLOOM—Diesel Reference Guide \$4.00

A book for reference purposes and instruction on modern diesel engineering, land, marine, locomotive, aero-service, automotive and portable duties. Includes a directory of manufacturers of diesel engines and products essential in diesel service and is profusely illustrated, containing tables, formulae, etc.

WATTS—Hints to up-to-date Navigators \$1.75

This little book would appear to be very useful to the junior officer who is taking his profession seriously and desires to adopt every means to advance his knowledge.

THE PENTON PUBLISHING COMPANY

1213 W. 3rd St.

Book Department

Cleveland, Ohio
224-M

REGAINING OUR SUPREMACY OF THE CLIPPER SHIP ERA



THE *Rainbow*, first of the great American clipper ships, when launched from the yards of Smith and Dimon in New York in 1845 not only caused a revolution in marine design but also marked the beginning of a great American merchant marine. For almost 20 years, the Yankee clipper fleet with such famous boats as the *Flying Cloud*, *Sea Witch*, *Honqua*, *Samuel Russell*, and *Orient*, was a leader in world commerce, especially in the China tea trade, where speed was paramount. • The same American enterprise and ingenuity that brought in the clipper ship era are now creating fast vessels of new design, that are becoming increasingly familiar sights in ports all over the world. Of the many speedy merchantmen which have been launched during the last five years, it is significant that a large number are electric ships. • Electric drive promises to be a vital factor in restoring the American merchant marine to the position of preëminence it enjoyed during the clipper ship era. • The marine engineers of the General Electric Company in Schenectady, N. Y., who pioneered and developed electric drive, will gladly coöperate with progressive American ship owners in designing equipment which will keep them in the vanguard of maritime revival.

173-31

GENERAL ELECTRIC



CARDBOARD HOUSES *“don’t go”* IN INDUSTRY

Manufacturers invest many thousands of dollars in advertising to tell you of their products, and the service you can expect from them.

It’s illogical to suppose that such sums will be invested unless the manufacturer knows positively his product can fulfill the promises made for it. They do not spend huge sums building “Cardboard Houses.”

Any manufacturer who advertises consistently year after year has a product that has proven its value by performance . . . that has demonstrated to users that it will do all that has been claimed for it.

Read the advertisements of these concerns in this publication. Study their advertising messages. They are an intelligent discussion of methods and products to improve your business.

READ

the advertisements of the following Companies in this issue:

Almy Water Tube Boiler Co.
 American Ship Building Co.
 Bethlehem Shipbuilding Corp., Ltd.
 Boland & Cornelius
 Cramp Brass & Iron Foundries Co.
 General Electric Co.
 Hamburg-American Lines
 Hyde Windlass Co.
 Jerguson Gage & Valve Co.
 C. M. Lane Lifeboat Co., Inc.
 Manitowoc Shipbuilding Corp.

Andrew J. Morse & Son, Inc.
 New York Shipbuilding Co.
 Oldman Boiler Works, Inc.
 E. H. Reading
 E. S. Ritchie & Sons
 Samson Cordage Works
 Sheriffs Manufacturing Co.
 Star Brass Mfg. Co.
 Sun Shipbuilding & Dry Dock Co.
 Westinghouse Traction Brake Co.
 Wickwire-Spencer Steel Co.

Progressive manufacturers are advertising dependable products

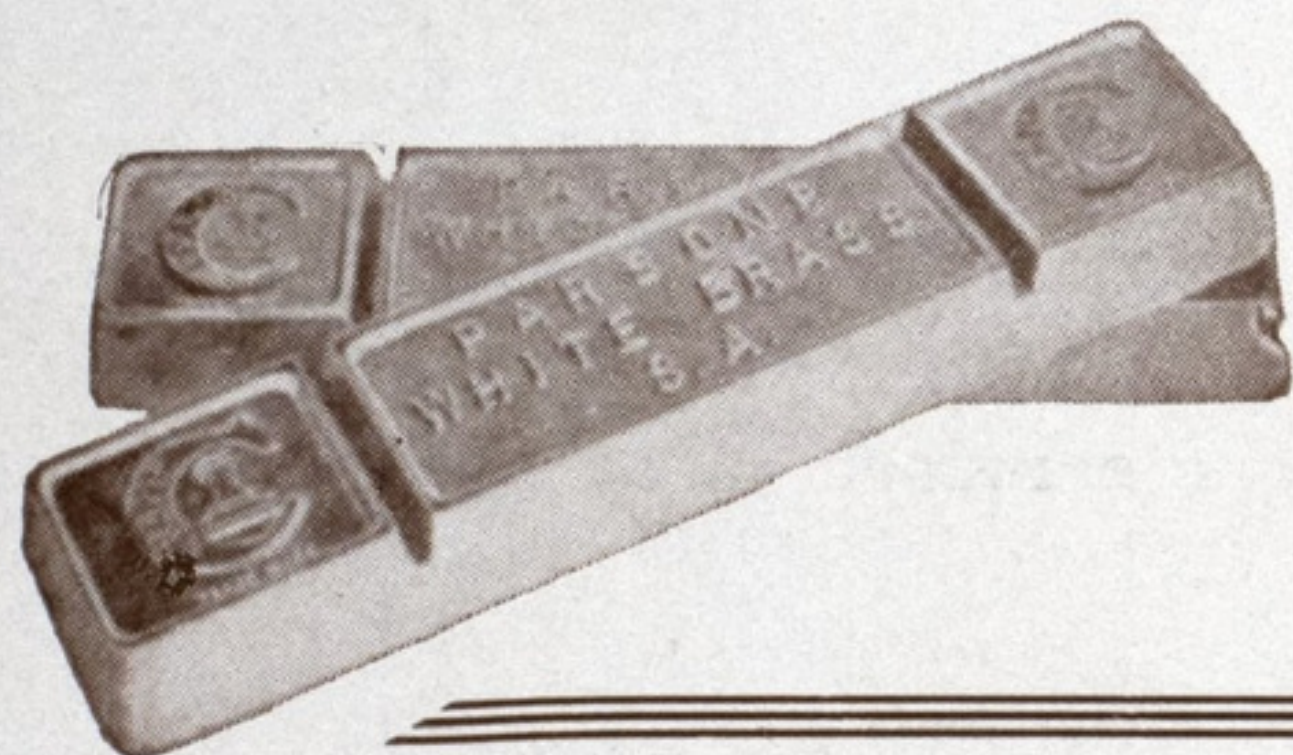
A Shrewd Way

TO MEASURE THE VALUE OF BABBITT METAL

Write in "PARSONS' WHITE BRASS S.A." on your specification sheet.

... **S**HREWD ship operators are not influenced by price when buying babbitt metal. They insist on the super-babbitt—the babbitt that will save them a costly trip to the shipyard for bearing replacement. It is PARSONS' WHITE BRASS S.A.

This bearing metal has conclusively demonstrated its superior qualities for main journals, connecting rods, cross heads, eccentric straps, and other parts of the ship.



CRAMP BRASS & IRON FOUNDRIES CO.

Paschall Station, Philadelphia



If You Want The Best Specify

Hyde

S. S. "A. F. HARVEY" owned by Pittsburgh Steamship Co. and built by Great Lakes Engineering Works.

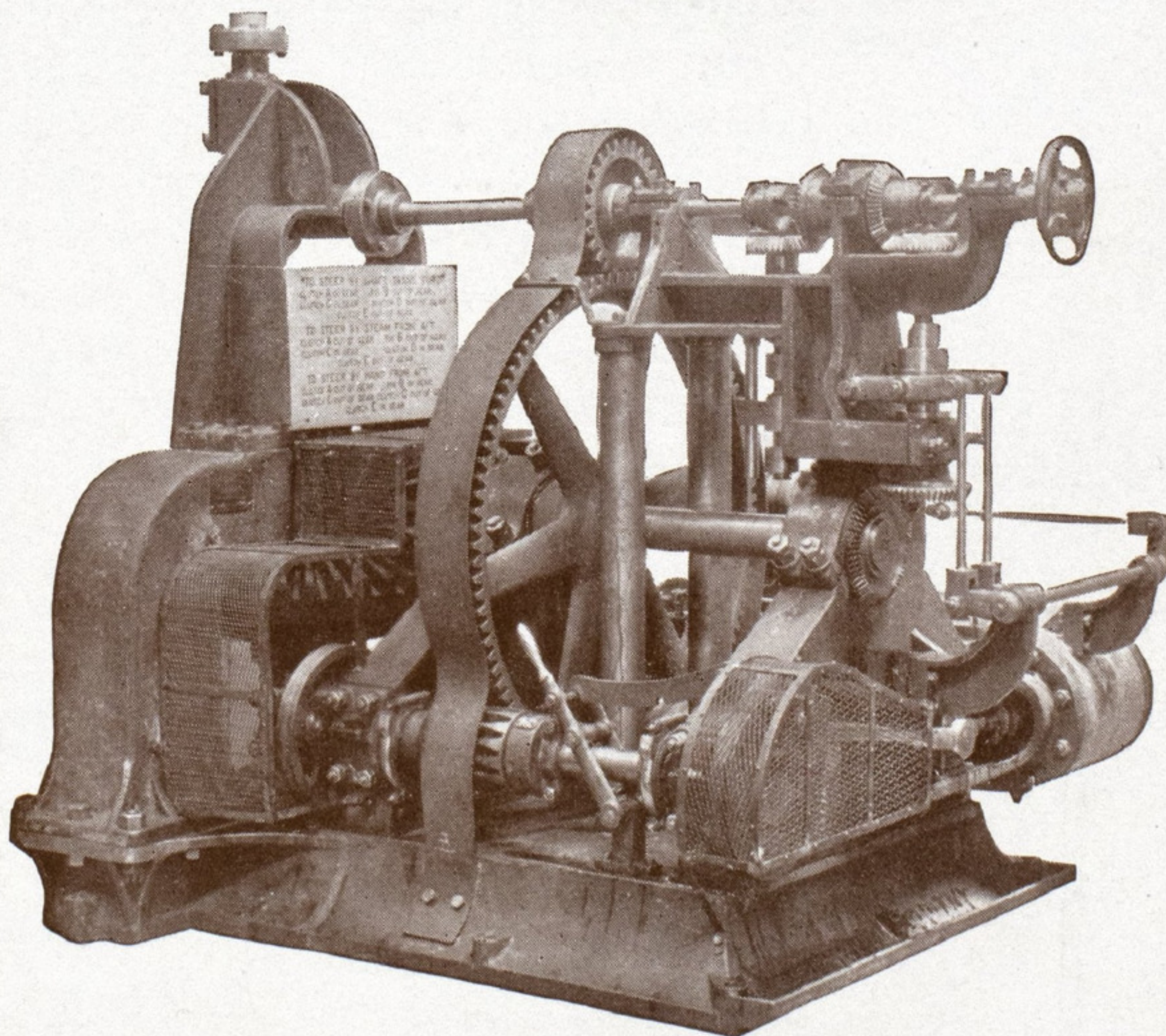
S. S. "B. F. AFFLECK" owned by Pittsburgh Steamship Co. and built by Toledo Shipbuilding Co.

S. S. "S. T. Crapo" owned by Huron Transportation Co. and built by Great Lakes Engineering Works.

These three fine new boats are all equipped with

Hyde

Quadrant Type
Steering Gear
Spur Gear Windlass
Mooring Winches
Hatch Winches



HYDE Quadrant Type Steering Gear

Hyde

Windlass

Company

Bath, Maine